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Final Report

# **Evaluation of Youth Peer-to-Peer Impaired Driving Programs**

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16. Abstract  <p>More than 16,000 high schools in the U.S. have youth peer-to-peer groups that encourage students to refrain from drinking, drinking and driving, and riding in a vehicle with a drinking driver. While each of these groups is unique, most refer to themselves as SADD chapters (Students Against Driving Drunk). Selected highly active chapters were studied in Arizona, Ohio, and Wisconsin. Focus group results indicated that chapter members, primarily female, are leaders in many school and community activities. School-wide surveys conducted in six active peer-to-peer program schools and six comparison schools without active peer-to-peer programs (N = 17,484) indicated that students attending an active-program school were exposed to substantially more in-school activities directed against drinking and drinking and driving. They were also more likely to hold attitudes reflecting positive reasons as to why not to use alcohol. Student self-reported behavior and data covering police-reported crashes were inconclusive. It was felt that student activities such as SADD can be an important component of a total community strategy to deal with underage drinking.</p>					
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**Background**

An estimated 16,000 U.S. high schools have youth peer-to-peer groups that encourage students to refrain from drinking, drinking and driving, and riding in a vehicle with a drinking driver. These groups work with their fellow students seeking to influence drinking and driving attitudes. They also sponsor school and community activities, promote parent-student agreements regarding alcohol, and are often involved in general drug abuse prevention.

These peer-to-peer high school groups typically have a faculty advisor and several dozen student members. Most programs with a main focus on anti-drinking and driving refer to themselves as SADD chapters (Students Against Driving Drunk). Each has developed its own unique approach, objectives, and activities, however, typically borrowing from the national SADD program, other national programs, and state and community initiatives.

**Objective**

The objectives of this study were to identify the characteristics of exemplary peer-to-peer high school organizations against drinking and driving and to evaluate their impact on student attitudes, drinking and driving related behaviors, and motor vehicle crashes.

**Method**

In practice, peer-to-peer high school programs vary substantially in terms of their characteristics and the amount of activity they are involved in during any given year. The present study was not concerned with documenting this variance nor was it concerned with examining either inactive programs or programs with average activity levels. Rather, the current interest was to document highly active and exemplary programs. Therefore, the results described below are not necessarily representative of all peer-to-peer high school groups.

National and state organizations were contacted and asked to identify high schools with exemplary programs. Six high schools (two each in Arizona, Ohio, and Wisconsin) were identified

(Continue on additional pages)

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and matched with six similar comparison schools without such programs. All the active programs identified themselves as SADD chapters. Focus groups were conducted with program members at each exemplary school during the spring of 1994 and again during the spring of 1995. Exemplary and comparison schools conducted in-school surveys of their respective student bodies during 1994 and again during 1995. Survey items covered drinking, and drinking and driving, attitudes and self-reported behaviors. Data covering police-reported crashes were obtained for the areas served by each of the exemplary and comparison schools.

## Results

Focus group results indicated that most program members joined because they wanted to prevent death and injury among their fellow students. Some had experienced a personal loss involving a friend, classmate or family member. Others joined, or were recruited, to help break from friends or situations that were bad influences. The members were more often student leaders in many different areas. These exemplary SADD chapters typically had: student officers and/or an "executive committee"; an annual budget of about one to two thousand dollars (raised primarily through donations and fund-raising activities); regular participation in community-wide activities; and concern with promoting healthy lifestyles in general in addition to reducing drinking and driving.

School-wide survey results indicated that the programs were well known within their schools: 94 percent of the general student body knew that the school had an anti-drinking and driving organization, and 82 percent referred to that organization as SADD (unaided recall). Overall, 7 percent of the students in the program schools were members of their SADD chapter (10 percent of the female students, 3 percent of the males).

Students attending a program school, as compared with students attending a school without an active peer-to-peer program, reported being exposed to substantially more anti-drinking, anti-drinking and driving, and anti-drug related information in school. This information was delivered in more ways (such as pamphlets, posters, or school papers) and was part of more school activities (like a school assembly, mock crash, or alcohol free prom/graduation).

Students attending an active SADD school, as compared with students attending a school without an active program, were more likely to agree that: *Non-alcohol parties can be as much fun as parties at which alcohol is served*; and *My parents would be extremely upset if I was caught drinking*. Students in the SADD schools were less likely to agree that: *There is nothing wrong with high school students drinking, as long as they don't drive*; and *The fear of getting arrested for driving drunk is enough to stop me from doing it*. Taken together, these attitudinal differences suggest that the primary program message to fellow students is a positive prevention message. The SADD message does not stress "fear" nor does it condone underage drinking.

Survey results covering self-reported drinking and drinking and driving behaviors did not show consistent statistically significant differences between the active-program and comparison schools. Nevertheless, the overall results generally favored the SADD schools. There was evidence that

students in the active-program schools were less likely to have ever consumed alcohol and that female students in the active-program schools were less likely to have ever used false identification to obtain alcohol.

Similarly, the present study did not find consistent statistically significant differences between the SADD and non-SADD communities with respect to police reported-crashes. Nevertheless, the results generally favored the SADD communities for all crash involvements, night crash involvements and single vehicle involvements of 16-17 year old drivers.

### **Conclusion**

Peer-to-peer programs such as the SADD chapters studied provide real benefits to their members in terms of personal growth, experience, and a community/citizen perspective. Chapter activities provide "memorable" information, education, and alcohol-free alternatives for their fellow students. These activities have positive effects on the drinking- and drinking and driving-related attitudes of the overall student body. Such attitude change, however, is not conclusively reflected in clear reductions in drinking and driving behaviors or clear reductions in alcohol-related crashes. On balance, a vigorous program such as SADD should be viewed as one, albeit important, component of a total community strategy to deal with underage drinking and driving.

## ACKNOWLEDGEMENTS

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We also want to thank the 12 schools that participated in the study. All were very helpful in collecting data for us, providing background information on their students and communities, and — in SADD schools — making students available for focus group discussions. They were:

Carl Hayden High School, Phoenix, Arizona  
Cortez High School, Phoenix, Arizona  
Marcos de Niza High School, Tempe, Arizona  
McClintock High School, Tempe, Arizona  
Dublin Coffman High School, Dublin, Ohio  
Fairfield Union High School, Lancaster, Ohio  
Philo High School, Philo, Ohio  
Worthington Kilbourne High School, Worthington, Ohio  
Franklin High School, Franklin, Wisconsin  
Menasha High School, Menasha, Wisconsin  
Oconomowoc High School, Oconomowoc, Wisconsin  
Oshkosh West High School, Oshkosh, Wisconsin

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# I. INTRODUCTION

This is the final report for contract number DTNH22-92-D-05270 between the National Highway Traffic Safety Administration and the Preusser Research Group. This report covers an eighteen-month examination of peer-to-peer anti-drinking and driving programs in high schools.

Many, many U.S. high schools have youth peer-to-peer groups that encourage students to refrain from drinking, drinking and driving, and riding in a vehicle with a drinking driver — Students Against Driving Drunk (SADD) alone is estimated to have more than 16,000 chapters. These groups work with their fellow students seeking to influence drinking and driving attitudes. They also sponsor school and community activities and promote parent-student agreements regarding alcohol.

The present study examined six high schools in three different states with exemplary peer-to-peer group organizations. Each was matched to a high school without comparable peer-to-peer activities. State Offices of Highway Safety, SADD, and other national student organizations were asked to recommend schools for participation in this study. Participating schools were located in Arizona, Ohio, and Wisconsin, three states with lower BAC laws for drivers under the age of 21. Site visits were conducted to collect information on program characteristics. Schools conducted surveys of students both during 1994 and 1995 to assess participation in the program, attitudes, and self-reported behavior. Crash records for the respective communities were compared.

The specific objectives of this project were as follows:

- Identify the characteristics of exemplary peer-to-peer organizations.
- Assess youth attitudes in schools with and without such programs.
- Compare crash rates in communities with and without such programs.

The remainder of this section discusses the youth alcohol problem and the range of countermeasures currently in place to address this problem. It will be shown that underage drinking remains a national problem despite the "under 21" drinking laws in place in all states. Addressing this problem requires a range of actions from prevention and education through rehabilitation. SADD, and other peer-to-peer types of interventions, should be viewed within the context of an integrated community response to the problem.

## **Problem**

Alcohol use among young people has been shown to be related to highway crashes and a range of other health and safety concerns (see, for example, Wagenaar, 1993). One countermeasure for limiting youth alcohol related problems has been laws which establish 21 as the minimum alcohol purchase age. By 1984, 23 states had such laws and federal legislation was adopted which would have withheld highway funds from the remaining 27. As of July, 1988, it was illegal to sell alcohol to anyone under the age of 21 in all 50 states and the District of Columbia (Preusser et al., 1994). Still, the alcohol-related crash rate for 16- and 17-year-olds is nearly twice the rate for drivers ages 25 and older. The rate for 18- to 20-year-olds is nearly three times the rate for drivers aged 25 and older (Preusser et al., 1993).

In many communities, alcohol is readily obtainable by underage persons. In a recent study, 19- and 20-year-olds bought beer on 97 of 100 purchase attempts in Washington, DC, and 82 of 103 purchase attempts in Westchester County, New York, without using false ID and without lying about their age (Preusser and Williams, 1992). A national survey conducted during 1993 indicated that 51 percent of high school seniors consumed alcohol within the preceding month and 76 percent consumed alcohol within the preceding year (Johnston et al., 1994). While these figures indicate substantial declines from similar surveys conducted five, ten, and fifteen years earlier, they also indicate that underage drinking is still very common.

More of these underage persons obtain alcohol from friends than from any other source including parents and direct purchase from a retail outlet (Preusser et al., 1995). Often, these "friends" are themselves under the age of 21. Similarly, Wagenaar et al. (under review) found that the "source of alcohol at the last drinking occasion" for ninth and twelfth graders in Minnesota and Wisconsin was: most often friends over 21; followed by friends under 21; followed by home; followed by commercial outlets.

The problem of underage drinking and driving seems most severe in suburban and rural communities as well as smaller cities and towns, where the automobile is the principal means of transportation. Urban youth tend to become licensed and begin regular driving later in life (Ferguson et al., in press).

A solution to this problem will likely require community systems integrating education, prevention, enforcement, adjudication, and rehabilitation. The paragraphs below describe the current status of these systems based on a survey of 50 jurisdictions recently conducted for the Police Executive Research Forum (1994).

## **Education/Prevention**

Most communities are actively engaged in some form of youth alcohol/drug education. DARE officers are common along with Sober Graduation programs. There is also typically an alcohol/drug component in driver education.

Education is a readily acceptable countermeasure approach in virtually every community. Also, it can be implemented at relatively low cost at least when compared to other countermeasure approaches.

## **Legislation**

The laws related to youth drinking and youth drinking and driving vary substantially across the states. Nonetheless, each state has one or more statutes related to the sale of alcohol to persons under the age of 21; most states have statutes related to the possession and/or consumption of alcohol by underage persons; and all states have laws against impaired driving. Some states also have special laws that deal with youth drinking and driving. "Low BAC" or "zero tolerance" laws, for instance, establish lower BAC limits for youthful drivers as opposed to adult drivers. Also, curfew laws limit the behavior of minor teenagers during the particularly hazardous late night hours when drinking and driving is more common.

## **Enforcement**

Alcohol Beverage Control (ABC) agencies and State Police working with ABC agencies have a primary interest in limiting underage sales. Many ABC agencies conduct extensive "sting" or decoy operations whereby an underage person attempts to buy alcohol and enforcement action is taken against the seller if the sale is made. These agencies also do various types of surveillance operations plus follow-up investigations from incident reports.

Enforcement of Minor in Possession (MIP) or Minor in Consumption violations varies substantially. Some agencies use these statutes only when absolutely needed to prevent an intoxicated juvenile from harming him/herself or others. Many agencies are just as likely to arrest as to "pour," that is, dump the alcohol and send the juvenile off with a warning. A few agencies aggressively enforce these laws, typically as part of an integrated program involving the prosecutor, the court, and the community.

## **Adjudication**

Jurisdictions vary considerably in the ways underage alcohol offenses are adjudicated. One common practice is "diversion," sometimes handled entirely within the police department with the advice and consent of the prosecutor and the juvenile court. Through diversion, the offender avoids the creation of a juvenile or criminal record by agreeing to accept a range of rehabilitation and restitution options offered by the diversion officer or the court. Diversion is generally available only once and only for lesser offenses without extenuating circumstances.

Adjudication in large cities, and in smaller communities tied to larger county-wide adjudication systems, can be far more problematical. Many of these systems, backlogged with major crime, devote little attention to underage alcohol violations.

## **Sanction/Rehabilitation**

Penalties for MIP violations vary substantially across jurisdictions. In one community, for example, the typical sanction is "letter probation," which means that juvenile authorities mail a letter indicating that action will be taken if there is a repeat occurrence. Sanctions in other communities include writing an essay, paying a fine, and performing some form of community service. In one community, the sanction is helping parents with household chores, monitored by the parent, and reporting back to juvenile authorities.

Many communities require alcohol assessment (clinical evaluation of the underlying alcohol/drug problem) followed by alcohol school or more intensive rehabilitation as indicated by the assessment. Most systems that use assessment rely on user fees to cover the costs.

Many communities suspend the individual's license to drive or, for unlicensed offenders, delay the age at which a license may be issued following an alcohol conviction (for example, for Minor in Possession). This is often referred to as "Use and Lose."

## **SADD**

Most communities find that there is no single solution to halt underage drinking. Rather, the goal is to implement a full range of efforts from prevention to rehabilitation with the understanding that no single stand-alone effort will be able to solve the problem.

In this context, peer-to-peer high school groups such as SADD should be viewed as one component of a larger overall strategy. These programs are targeted at high schools and have prevention and education as their main goals.

SADD was founded in 1981. As originally developed, a SADD program would start with a school assembly, followed by the formation of a SADD chapter consisting of students interested in combatting the problem, followed by the introduction of a sophomore curriculum. An important part of the program was the Contract for Life committing students and parents to actions which would avoid underage drinking and driving situations. SADD has grown substantially over the years, and it is now estimated that there are SADD chapters in more than 16,000 of the nation's high schools. SADD's recommended objectives have evolved to include teen growth and development, avoiding destructive decisions and making positive ones, and community outreach. However, the theme of preventing drinking and driving has remained central.

It is not known how many of these chapters have actually followed the original SADD model for program development and objectives. In fact, it appears likely that most have not. The more operative model is that interest in combatting drinking and driving forms in the high school, and the SADD materials are requested along with materials from other groups and other sources. This information is then integrated into a locally designed program consistent with local needs and local personalities. Within many states, there are state SADD coordinators who track the existence of local chapters, distribute safety materials, and

generally provide information and advice to local chapters. Often the state SADD organizations hold conferences for advisors and students from the local chapters.

Nevertheless, most existing SADD programs are unique entities. Their organization, their goals, and their activities combine distinctly local elements along with elements of the national SADD program plus elements of other national programs.

SADD programs in California and New Mexico have been evaluated using a pre-post design (Klitzner et al., 1994). One experimental and one comparison high school were selected in each state. Each experimental high school had indicated an intention to start a SADD program while each comparison school had not. The schools were tracked over time through repeated surveys of the student body. The main finding was that neither school actually implemented the full SADD program following the SADD model.

The present study did not adopt a pre-post design. Rather, the selection of schools with SADD programs was based on finding existing chapters that were particularly active. Each of these chapters had elements of the SADD national program plus elements from other programs plus elements that they had developed themselves. Each also coordinated their actions with other elements of the total community strategy. That is, they were not solely concerned with underage alcohol prevention. Enforcement and other criminal justice professionals were often called upon address student assemblies. Coordination with "student assistance" and counseling was common. SADD members often worked with MADD and other groups on community programs.

The comparison schools were ones near the SADD-program schools, in generally comparable communities, but without active SADD programs (or other peer-to-peer anti-drinking and driving programs). In the comparison schools and in the SADD schools, there were often other organizations which targeted related issues, typically alcohol and other drug abuse.

The SADD programs included in this study are more fully described elsewhere in this report. Each description is based on how the chapter members and faculty advisors actually described their programs. These programs all resemble the national model and all have elements unique to their own school.

The present study should not be considered as an evaluation of SADD or the SADD model for high school programs. Rather, it is a comparison between high schools that have and have not implemented active peer-to-peer anti-drinking and driving programs, ones recognized as exemplary by their state and national organizations. Each of these programs refers to itself as a SADD chapter, and each uses many activities and materials from the SADD national organization. However, as will be described later, each is unique and each is uniquely integrated into the full range of prevention to rehabilitation elements of their community's response to underage drinking.

## II. METHODS

### Site Selection

The overall design was based on recruiting twelve schools — six having strong, active peer-to-peer programs and six matched schools without such programs — spread across three states. In the site selection process, states which had zero tolerance laws for teen drivers were given preference. At the beginning of 1994 when sites were being selected, 15 states had BAC limits for teen drivers of .02% or less: Arizona, Arkansas, Maine, Maryland, Minnesota, Nebraska, New Jersey, New Mexico, North Carolina, Ohio, Oregon, Tennessee, Utah, Vermont, and Wisconsin. Another five had limits lower than those for over-21 drivers: California (.05%), Georgia (.06%), New Hampshire (.04%), Rhode Island (.04%), and Texas (.07%). States were given priority if their zero tolerance laws applied to all drivers under 21 years of age.

From those states, ones were identified which had significant numbers of schools with strong peer-to-peer programs with the assistance of Students Against Driving Drunk (SADD). Through SADD and through the SADD coordinators in the State Offices of Highway Safety, individual schools were identified and were approached for their willingness to participate in the study. States in which active recruitment was undertaken included Arizona, New Hampshire, Maryland, Ohio, Vermont, and Wisconsin.

When possible sites were first being identified, other organizations, for example NSSP (National Student Safety Program) and Teen Institute, were considered as sources of active programs. They were less able to identify active programs, or their programs placed relatively little emphasis on anti-drinking and driving, and the final site selection focussed on SADD chapters. The programs finally selected were chosen for their high level of activity directed specifically against teen drinking and driving rather than for any degree of adherence to a national SADD model.

In each state, recruitment proceeded in two steps. First, schools with vigorous SADD chapters were approached for their willingness to participate in a two-year project. In general, schools were sought in suburban/small city environments and more rural environments. Second, once SADD schools were tentatively enrolled, comparison schools with no comparable peer-to-peer group were sought. One comparison school was sought for each SADD school. To the extent possible, the comparison schools were sought in nearby communities (so they would be exposed to the same general media and enforcement emphases) of similar size and demographics. For their participation in the two-year study, schools were offered an honorarium of \$150 each year to be used to support student programs and activities.

The first states for which four schools could be recruited, two peer-to-peer and two comparison, were included in the study. They were Arizona, Ohio, and Wisconsin. Arizona schools were in residential areas of the cities of Phoenix and nearby Tempe. Two Ohio schools were in upper-middle-class suburbs of Columbus, and the others were rural regional schools southeast of Columbus. Two Wisconsin schools were located in communities near Milwaukee, while the others were in small cities on Lake Winnebago. Key information on the schools and communities is given in Table 2-1.

Table 2-1. Study Schools and Communities

School	Enrollment	SADD?	Community	Community Type	Population (1990 census)	Population Density <sup>1</sup>
<b>OHIO</b>						
Worthington Kilbourne HS	1,310	Yes	Worthington	Suburban	14,870	2,655
Dublin Coffman HS	2,110	No	Dublin	Suburban	16,370	925
Philo HS	635	Yes	Southern Muskingum County	Rural	5,333	48
Fairfield Union HS	595	No	Northeastern Fairfield County	Rural	10,851	110
<b>WISCONSIN</b>						
Franklin HS	1,000	Yes	Franklin City	Suburban	21,900	632
Oconomowoc HS	1,375	No	Oconomowoc	Small city/suburban	18,300	511
Oshkosh West HS	1,370	Yes	Oshkosh	Small city	59,700	1,877
Menasha HS	1,015	No	Menasha	Small city	28,700	1,669
<b>ARIZONA</b>						
Cortez HS	860	Yes	Phoenix	Urban	983,400	2,342
Carl Hayden HS	2,300	No	Phoenix	Urban	983,400	2,342
Marcos de Niza HS	1,850	Yes	Tempe	Suburban	141,900	3,591
McClintock HS	1,870	No/Yes <sup>2</sup>	Tempe	Suburban	141,900	3,591

<sup>1</sup> People per square mile.

<sup>2</sup> McClintock High School developed a strong, active SADD program during the second year of the project.

In Phoenix, Cortez and Carl Hayden are two of about 20 public high schools for the entire city. Both are in residential areas and serve the students living nearby. Marcos de Niza and McClintock are two of four public high schools in Tempe. They serve similar residential neighborhoods.

Worthington and Dublin are suburbs of Columbus. Worthington Kilbourne High School is one of two serving Worthington. Dublin Coffman draws most of its students from Dublin but also has some students from an adjacent section of Columbus and from an adjacent township. Philo and Fairfield Union High Schools each draw students from a number of small communities and rural areas in south-central Ohio.

Franklin is a suburb of Milwaukee; it receives about 10 percent of its students from Milwaukee, and a similar number of students who live in Franklin attend school in Milwaukee. Oconomowoc is a small city between Milwaukee and Madison; it may be characterized as a stand-alone community with suburb-like links, particularly to Milwaukee. Oshkosh West is one of two public high schools in Oshkosh. Menasha is a small city adjacent to Appleton, a somewhat larger small city.

## **Measures**

Three kinds of data were collected in this study. They are described below.

### **Peer-to-Peer Organization**

Each school with an active peer-to-peer organization was visited by a member of the project staff. Where possible, a chapter meeting was observed. In all cases, a focus group was held with "core" members of the group. The discussion was led by the project staff member. In about half the cases, the group's faculty advisor was present for and participated in the discussion. Topics covered in the focus groups were:

- **Background:** When and how did the chapter come into being, what events precipitated its formation, who was the prime mover behind the formation; How has the chapter changed since it was formed (size, leadership, structure, goals, activities); How many members were there in the first year and the current year.
- **Organization:** Who is the faculty advisor; what is his or her role; What student officers are there and what are their roles; How often does the chapter meet; Are there separate officer-only meetings.
- **Purpose/Goals:** What are chapter goals and objectives; What are specific student-body behaviors, situations, events, and beliefs to which chapter activities are targeted; What are individual/personal goals, expectations, rewards.

- **Outreach:** With what other student or community groups does the chapter work, and how.
- **Activities:** What activities and projects did the chapter perform in the last year, with emphasis on targets and goals, activity level, and results.
- **Support:** What is the chapter's annual budget, how are funds raised, how are they spent; What "in-kind" support is received from the school, parents, other student groups, merchants, the police, and others.

Where possible, materials such as posters, banners, awards, newspaper articles, and chapter minutes were reviewed during the visits to gain as full a picture as possible of the way the chapters attempted to influence their fellow students.

### **Student Self-Reported Knowledge, Attitudes, and Behavior**

Each school administered a two-page survey to as many of their students as possible. For schools with peer-to-peer programs, those chapters took responsibility for scheduling, distributing, collecting, and returning the surveys. In the comparison schools, a contact person, typically an assistant principal, handled the survey administration. Surveys were administered in the spring of the 1993-1994 school year and again in the spring of the 1994-1995 school year. The surveys were administered anonymously.

A sample survey is shown in Figure 2-1. Questions could be divided into categories:

- **Demographic:** Grade, age, sex, grade point average.
- **Licensing/Driving Experience:** When got license or permit; current driving frequency, distance, and purposes; crash and ticket history.
- **Alcohol Experience:** Current frequency of drinking; use of false I.D. to purchase alcohol.
- **Drinking and Driving Experience:** Own drinking and driving; alcohol-related crash and ticket history; riding with drinking drivers.
- **Drinking and Drinking and Driving Attitudes and Knowledge.**
- **School Peer-to-Peer Anti-Drinking and Driving Group:** Awareness, membership.
- **Awareness of In-School Activities Against Drinking, Substance Abuse, and Drinking and Driving:** Topics, media, and specific activities.

## TEEN DRIVING SURVEY – Dublin Coffman High School

Grade: \_\_\_\_\_ Sex: 1.  Male 2.  Female Date of Birth: Month \_\_\_\_\_ Year \_\_\_\_\_

1. Have you ever driven a motor vehicle on a public street or road?
  1.  Yes
  2.  No (SKIP TO QUESTION 7.)
2. In a typical week, what kind of driving do you do? (CHECK ALL THAT APPLY)
 

1. <input type="checkbox"/> To/from school	6. <input type="checkbox"/> Going to parties
2. <input type="checkbox"/> To/from work/at work	7. <input type="checkbox"/> Just for enjoyment of driving
3. <input type="checkbox"/> School-related activities	8. <input type="checkbox"/> Learning and practicing driving
4. <input type="checkbox"/> Family errands	9. <input type="checkbox"/> Other _____
5. <input type="checkbox"/> Visiting friends	
3. In a typical week, how much do you drive: No. of times \_\_\_\_\_ No. of miles \_\_\_\_\_
4. Do you currently have a driver's license or learner's permit?
  1.  Yes, have driver's license When got it: Month \_\_\_\_\_ Year \_\_\_\_\_
  2.  Yes, have learner's permit When got it: Month \_\_\_\_\_ Year \_\_\_\_\_
  3.  No
5. Have you ever received a ticket for a moving traffic violation?
  1.  Yes ... (IF YES) How many tickets? \_\_\_\_\_  
How many were for alcohol-related offenses? \_\_\_\_\_
  2.  No
6. Have you ever been involved in an automobile crash as a driver?
  1.  Yes ... (IF YES) How many crashes? \_\_\_\_\_  
How many while drinking? \_\_\_\_\_
  2.  No
7. Other than in the presence of your immediate family, have you ever consumed any alcoholic beverages?
  1.  Yes
  2.  No (SKIP TO QUESTION 11)
8. On average, how often have you consumed alcoholic beverages during the past year?
 

1. <input type="checkbox"/> Not at all in the past year	3. <input type="checkbox"/> 6 - 12 times a year	5. <input type="checkbox"/> 2 - 3 times a week
2. <input type="checkbox"/> 1 - 5 times a year	4. <input type="checkbox"/> 2 - 4 times a month	6. <input type="checkbox"/> 4 or more times a week
9. Within the last year, how many times have you driven after drinking?
 

1. <input type="checkbox"/> I don't drive	3. <input type="checkbox"/> 1 - 2 times	5. <input type="checkbox"/> 5 or more times
2. <input type="checkbox"/> None	4. <input type="checkbox"/> 3 - 4 times	
10. Have you ever used false I.D. to obtain alcoholic beverages? 1.  Yes 2.  No
11. Within the past year, how many times have you ridden in a car with a teenage driver who had been drinking? (CHECK ONE)
 

1. <input type="checkbox"/> None	2. <input type="checkbox"/> 1-2 times	3. <input type="checkbox"/> 3-4 times	4. <input type="checkbox"/> 5 or more times
----------------------------------	---------------------------------------	---------------------------------------	---

12. Does your school have a student organization against drinking and driving?

1.  Yes ... (IF YES) Name of organization? \_\_\_\_\_
- Are you a member? 1.  Yes 2.  No
2.  No

13. What was your average grade for all courses last semester? (CHECK ONE)

1.  A (90-100) 2.  B (80-89) 3.  C (70-79) 4.  D (60-69) 5.  F (59 or less)

14. In the blank next to each of the statements listed below, please write in a number which indicates how much you agree or disagree with the statement, using the following scale:

Strongly Agree	Pretty Much Agree	Slightly Agree	Slightly Disagree	Pretty Much Disagree	Strongly Disagree
1	2	3	4	5	6

- \_\_\_\_\_ a. Driving after drinking a couple of beers isn't really dangerous.
- \_\_\_\_\_ b. There is nothing wrong with high school students drinking, as long as they don't drive.
- \_\_\_\_\_ c. I would not accept a ride with a friend who has been drinking.
- \_\_\_\_\_ d. In this state, one beer is enough to make a teenage driver legally "Under the influence of alcohol."
- \_\_\_\_\_ e. Non-alcoholic parties can be just as much fun as parties at which alcohol is served.
- \_\_\_\_\_ f. It is very easy for teenagers to buy beer in this community.
- \_\_\_\_\_ g. My friends would make fun of me if I didn't drink.
- \_\_\_\_\_ h. My parents would be extremely upset if I was caught drinking.
- \_\_\_\_\_ i. The fear of getting arrested for driving drunk is enough to stop me from doing it.

15. Which of the following is the legal blood alcohol limit for for teenage drivers in your state?

1.  .00% (not any) 2.  .01% 3.  .02% 4.  .05% 5.  .08% 6.  .10%

16. For each of the topics below, check if you have heard about them in school (whether in regular classes, special programs, posters or printed materials, other students, or any other way):

- |   |  |
|---|--|
| 1. <input type="checkbox"/> Underage drinking         | 5. <input type="checkbox"/> Designated Driver programs               |
| 2. <input type="checkbox"/> Drinking and driving      | 6. <input type="checkbox"/> 3-D (Drinking, Drugs, and Driving) Month |
| 3. <input type="checkbox"/> Illegal drugs             | 7. <input type="checkbox"/> Peer counseling programs                 |
| 4. <input type="checkbox"/> Illegal drugs and driving |  |

17. Check all the ways you have heard, in school, about underage drinking or drinking and driving:

- |  |   |
|--|---|
| 1. <input type="checkbox"/> In Driver Ed class                         | 5. <input type="checkbox"/> Pamphlets or other "hand-out" materials |
| 2. <input type="checkbox"/> In another class                           | 6. <input type="checkbox"/> School newspaper, radio, or TV          |
| 3. <input type="checkbox"/> Posters on bulletin boards                 | 7. <input type="checkbox"/> Another student                         |
| 4. <input type="checkbox"/> In a special presentation (e.g., assembly) | 8. <input type="checkbox"/> Informally from a teacher               |

18. Listed below are several kinds of activities addressing underage drinking or drinking and driving. Check each one in which you have participated or have seen in your school within the last year:

- |  |  |
|--|--|
| 1. <input type="checkbox"/> Victim Impact Panel assembly         | 5. <input type="checkbox"/> Prom/graduation alcohol-free parties |
| 2. <input type="checkbox"/> Assembly with outside speaker        | 6. <input type="checkbox"/> "Mock Crash"                         |
| 3. <input type="checkbox"/> "White-Out" (or "Ghost-Out") program | 7. <input type="checkbox"/> Red Ribbon Campaign                  |
| 4. <input type="checkbox"/> Crash car displayed outside school   | 8. <input type="checkbox"/> 3-D Month                            |

Figure 2-1. Sample In-School Student Survey

- Awareness of In-School Activities Against Drinking, Substance Abuse, and Drinking and Driving: Topics, media, and specific activities.

## Crash Data

The bottom-line effectiveness of any anti-drinking and driving program would be seen in reductions in the numbers of alcohol-involved crashes. To measure this, crash data were sought from state and local agencies. It was not possible to identify the home addresses of crash-involved drivers (in order to identify all crashes, and only those crashes, involving drivers from the areas from which the high schools drew students.) Rather, crashes were identified by whether or not they occurred in the high school areas. The appropriateness of the analyses depends on the (unvalidated but reasonable) assumption that crashes in the specific geographic areas from which the high schools draw students tend to involve drivers living in those areas.

Crash data for several years were sought. In our discussions with people at the schools, it was reasonable to believe that the sites with strong SADD programs had had the programs for several years and that the sites without such programs had been without them for several years.

Specific data obtained and their sources were:

- Phoenix (Cortez High School and Carl Hayden High School) divides the city into half-mile square grids. The City of Phoenix Police Department was able to provide crash data with the grid identifiers. For the purposes of analyses, the data were coded as to whether the events occurred in the area from which one, the other, or neither high school drew students. Because of recent changes in the data record system, crash data could only be provided for mid-May, 1994, through March, 1995.
- Tempe (Marcos de Niza High School and McClintock High School) uses the same grid scheme to identify areas within the city. The Tempe Transportation Department was able to provide crash data for events occurring within the areas covered by the two high schools. Data covered the years 1990 through 1994.
- The State of Ohio provided crash data for Fairfield (Fairfield Union), Franklin (Worthington Kilbourne and Dublin Coffman), and Muskingum (Philo) Counties. Data covered the years 1991 through 1994. Data included community (city, town, and township) identifiers which made it possible to identify appropriate geographic areas.
- The State of Wisconsin also provided crash data, for the counties of Milwaukee (Franklin), Waukesha (Oconomowoc), Calumet (Menasha), and Winnebago (Oshkosh and Menasha). Crash data covered the years 1991 through 1994. Text identifiers made it possible to identify the communities in which the crashes took place.

## **Data Analysis**

The three kinds of data were analyzed and are presented in three different manners according to the characteristics of the data. Descriptions of the SADD chapters and their programs, based largely on information gathered in the focus groups, are presented informally in a way intended to convey the personal and group dynamics as well as the specific chapter activities.

In-school survey results are presented in descriptive tables, typically by grade, sex, state, and SADD program yes/no. Although representing combinations of schools and years that vary considerably in their numbers of respondents, cells in the tables represent from approximately 800 to several thousand respondents and the values are quite stable.

These results were analyzed to identify statistically significant differences, using linear models as the primary tool. The analyses included the SADD yes/no primary factor and a number of other possibly meaningful covariate factors, such as grade, sex, state, school pair within state, and student age. Linear modelling can be used to adjust for correlations between factors and thus can compensate in large part for differences in numbers of respondents between conditions.

Crash data were analyzed with crosstabulation techniques (including chi-squared tests of independence) to determine whether there were differences in crash involvement for young drivers (compared to adult drivers) between areas where the high schools had strong SADD programs and the areas where the high schools had no peer-to-peer anti-drinking and driving program. Analyses were limited to crashes resulting in injuries or fatalities, since those are reported most consistently from jurisdiction to jurisdiction. For the fatal/injury crashes, tests were done for all crashes, for single-vehicle crashes, and for crashes occurring between 9 pm and 5:59 am. Single-vehicle and nighttime crashes have been shown to more frequently involve alcohol and, in the absence of actual BAC measurements in these crash data, were used here as surrogate measures.

### **III. RESULTS**

The results are presented in three major sections. First is a summary of the focus group discussions held at each of the SADD schools. This reviews the specific goals and activities of each chapter, providing information on how and why some peer-to-peer organizations form and thrive. It also provides confirmation of the basic study design, that these schools have, in fact, had active SADD programs in recent years.

The second section analyzes the results of the surveys administered by the schools. Presented are descriptions of the patterns of responses across schools, states, and SADD/no SADD programs. Also presented are statistical analyses of differences in patterns of responses related to the question of what differences in student knowledge, attitudes, and self-reported behavior can be related to the presence of active, peer-to-peer anti-drinking and driving organizations.

The third section presents and analyzes the crash data for the communities in which the schools are located.

#### **SADD Chapter Focus Group Summary**

##### **Background**

The following summarizes a total of 13 focus group discussions with students in seven different high schools. The discussions were held in two waves, one in April/May, 1994, and the other in February/March, 1995. Table 3-1 shows the groups which participated in each wave of interviewing.

The initial plan for focus group interviews called for two sessions, about a year apart, in each of six schools with exemplary peer-to-peer drinking and driving programs. However, the Worthington, Ohio, SADD chapter could not be interviewed in 1995 because it was no longer active. Instead, members of another group, Student Substance Abuse Prevention Program (S.S.A.P.P), were interviewed in the second year. (In the first year, students often belonged to both groups, and the groups' goals were generally similar.) In the other five schools interviewed in 1994, the session was repeated in 1995, as planned. Between 1994 and 1995, a new SADD chapter started up at McClintock High School (the "comparison" school) in Tempe, Arizona. An additional focus group was done at McClintock to gather information on the formation and development of a new chapter.

Table 3-1. Peer-to-Peer Organizations in Focus Groups

May/June, 1994	February/March, 1995
Worthington Kilbourne H.S. (OH) SADD Chapter	Worthington Kilbourne H.S. (OH) S.S.A.P.P. Chapter
Philo H.S. (OH) SADD Chapter	Philo H.S. (OH) SADD Chapter
Franklin H.S. (WI) SADD Chapter	Franklin H.S. (WI) SADD Chapter
Oshkosh West H.S. (WI) SADD Chapter	Oshkosh West H.S. (WI) SADD Chapter
Cortez H.S., Phoenix AZ SADD Chapter	Cortez H.S., Phoenix AZ SADD Chapter
Marcos de Niza H.S., Tempe AZ SADD Chapter	Marcos de Niza H.S., Tempe AZ SADD Chapter
	McClintock H.S., Tempe AZ SADD Chapter

The fact that, among our original set of twelve high schools, one SADD chapter disappeared and another started up is indicative of the ever-changing distribution of SADD programs from year to year.

It also illustrates the point that the presence of a motivated, competent faculty advisor is absolutely crucial to the existence of any kind of program. The Worthington Kilbourne SADD program stopped with the unanticipated retirement of the health teacher. He had started SADD in what was Worthington's only high school and started it anew when he moved to the second high school, Worthington Kilbourne, when it opened. In Franklin, Wisconsin, the SADD program was fairly weak in 1994, the year following the death of the group's long-time faculty advisor, but it picked up measurably in 1995 when two strong faculty advisors joined up. The program at McClintock High School in Tempe was started when a teacher who had been active with a SADD chapter in Massachusetts transferred into the school and, responding to student interest, volunteered to start a group.

There was no common thread among the SADD advisors with regard to teaching specialty. Advisors and co-advisors included a driver education teacher, a health/physical education teacher, a home economics teacher, two computer lab teachers, a French teacher, a special ed teacher, a librarian, and a counselor. Many, but not all, of the advisors were motivated by some personal life experience involving someone close to them being victimized in an alcohol-related crash. What all advisors had in common was a strong desire to keep their students alive and a good rapport (if not charisma) with the students.

Sometimes the initiative to start a SADD chapter came from the advisor, and sometimes it came from a few students. Sometimes it was spurred by a highly visible local alcohol-crash death, perhaps involving school students. Just as often there was no such "precipitating event," just an accumulation of interest plus one or two individuals who stepped in to lead.

Of the seven schools, three had male advisors involved in the programs and four had female advisors. Both genders could be equally effective.

## Organization

The size of the student groups varied from place to place and year to year. Approximate self-reported membership of each group is summarized in Table 3-2.

Table 3-2. Approximate SADD Chapter Memberships: Total and "Core Members"

High School	1993-94	1994-95
Worthington Kilbourne HS	30, 10	0
Philo HS	35, 20	60, 10
Franklin HS	15	70
Oshkosh West HS	70, 20	90, 35
Marcos de Niza HS	100, 35	150, 100
Cortez HS	100, 20	110, 25
McClintock HS	0	70, 15

As noted, Worthington Kilbourne SADD membership was zero in 1995 because the chapter folded. The S.S.A.P.P. group, which was interviewed in 1995, had a membership of about 70 students in both years. The membership figures cited above are approximate, because many of the groups did not levy any dues (which would provide for careful record-keeping), and students attended some, but not all meetings. Typically, about one-third of the membership was present at routine meetings. The groups turned out a high proportion of their stated membership at their initial organizing meeting and sometimes turned out more than their stated membership at special events.

While there was variance in gender composition, among the chapters and from year to year, males were in the minority in all of them, and some had hardly any male members. Overall, about three-fourths of members were girls. The lack of male membership was discussed in several groups. Various explanations were given by the students, but the prevailing view was that boys are harder to recruit because they somehow associate drinking as

a badge of masculinity, part of the "macho" image they would like to have. One member suggested that even boys who don't drink would not like it widely known. Of course, this varies from school to school. In places where there were more male members, there usually was a history in which popular male athletes had belonged to the group.

All but one of the SADD chapters had officers elected by the students; the other had an "executive board" chosen for interest, activity level, and broad representativeness. Interestingly, the S.S.A.P.P. group in Worthington, Ohio, had no student officers. The students said they got things done by consensus, but it appeared that this group was more faculty-directed and had less student autonomy than the SADD groups.

There was some variation in the number and titles of student officers from group to group and year to year. Most had a traditional structure with a president, vice president, treasurer, and secretary. Some also had an historian and/or a public relations officer. In 1995, Philo switched from the traditional organization to a three-person "presidential council." Similarly, McClintock's somewhat informal "executive board" made decisions by consensus. In other variations, offices were combined, and some groups also had standing committees whose chairmen were members of some kind of board of directors. There was no indication that one organizational form worked any better than others.

Universally, the officers selected by their peers were outstanding teens. All were active in many organizations, including student government, sports, music, debate, dramatics, and other service-oriented groups. In many cases, these activities had some tie-in with other organizations in which the faculty advisor participated. (For example, most of the Franklin, Wisconsin, officers were active in forensics; the SADD advisor was the forensics coach.) Often, the student leaders also had achieved academic honors, and most had part time jobs. Most of the chapter members who participated in the focus groups were also active, successful students, and it is likely that these traits characterized other chapter members as well.

Most of the student officers were seniors or, about as often, juniors. Interestingly, there was a coup in the Franklin, Wisconsin, chapter in mid-year 1995: A large group of sophomores, recruited in the fall, threw out the older officers elected the previous spring on the grounds that they were not doing an effective job of leading the group. The new officers were sophomores in their first year of membership. At the opposite extreme, the Oshkosh president was a senior who was serving her second year as president.

There seemed to be a direct correlation between the degree to which responsibility for planning and implementation of projects was delegated to the general membership (rather than the officers doing all the work) and the total level of chapter activity. The cause/effect relationship of this phenomenon was not clear.

## **Personal Motivations**

Asked why they joined SADD, almost all students said it was because they agreed with the purposes of the organization. In all groups, members felt that there was a lot of drinking and driving going on in their school and that the potential for tragedy was real. They wanted to do what they could to prevent deaths and injuries due to drunk driving by fellow students. They also agreed with broader SADD objectives such as community service and having teens make "positive decisions" in all aspects of their lives. Some joined because the SADD chapter was an active and involved organization, and they saw SADD as a way to affect the lives of others in many ways. Some (but not all) joined because of personal experiences or problems. In some cases, the students knew a fellow student, friend, or close relative who had been killed or injured in an alcohol-related crash; most members, however, did not have this personal connection. Others had family members or close friends with serious alcohol problems. Still others joined or were recruited to help themselves break from friends or situations that were bad influences.

Another powerful reason for joining SADD was that members had fun. Although many SADD activities are designed to convince non-members not to drink and drive, others are social events primarily for the enjoyment of members. Examples of this type of activity are parties, dances, retreats, and awards banquets. Even the more serious activities designed to get the attention of other students and the public at large had elements of fun in them. Some chapters felt that the trips they took to attend conferences were powerful attractions.

Finally, fellowship was a frequent and powerful motivation for joining SADD. Many students said they were initially attracted to the group because they had a friend in it. In addition, some noted that members come and go as their circle of friends changes.

Members stayed in SADD (and stayed active) for a combination of all these reasons. They believed in their chapter's goals and activities and felt that they were accomplishing worthwhile things. Just as important, they saw personal benefits — such as personal growth, social support, good friends, prestige, and the chance to participate in special activities.

## **Perceived Goals and Purposes**

Almost all members agreed that the primary purpose of SADD was to prevent drinking and driving and thus save lives. There was some controversy among members, as there was among adult advisors, about how far the group should go in efforts to stop drinking among students. Some student members felt that the group should make a greater effort to promote abstinence, but most would have agreed with a student who said, "We have all heard years of preaching not to drink, and many students have already made their choice to drink. Nothing we can do will change that, but the driving choice can still be influenced." Most also would have agreed with another student who said, "We (also) have to teach non-drinkers they ... are responsible for their friends who drink, that they have a liability to keep others safe."

When asked to comment on criticism that SADD efforts send a mixed message, that it is okay to drink as long as you don't drive afterward, members did not seem to be as concerned as adults who make the accusation. (The chapters in this study did, in fact, recommend against teen drinking, but it was not a major theme for any of them.) Some felt that by the time students were in high school they had been exposed to a variety of messages for a long time, and most of their choices were made at a much earlier age. Most felt it was unrealistic to think that many high school age drinkers could be convinced to stop, although many felt that by setting a good example they could influence younger students not to start.

The national SADD goals also extend to across-the-board support for teens in controlling their lives through positive decisions in all areas (such as drug use or sexual promiscuity) and to community outreach. As noted in the Introduction, individual SADD chapters have wide freedom to tailor their goals and activities to what is most appropriate and effective for their own situations. Some of the chapters in this study concentrated almost entirely on teen drinking and driving, often because their schools had other groups and activities dealing with other areas, and the members did not feel a need to go into them.

Other chapters emphasized objectives beyond preventing teen drinking and driving. Frequently this was still in the area of promoting safe driving practices. Examples included seat belt surveys, "buckle up" campaigns, painting speed bumps in the student parking lot, and staging a mock crash at a railroad crossing near the school.

Most of the chapters, some by specifically adopting the national SADD objectives, actively sought to add general community service goals to their charter. This drew them into activities such as providing CPR training for their communities, adopting homeless families for holidays, organizing blood drives, and contributing to broad-based charities like relief for victims of the 1993 Mississippi River floods. Within their schools, chapters may have emphasized personal growth and responsibility to all students, dealing with such high risk behaviors as drug use and sexual promiscuity. The group in Philo, Ohio, had changed its name to Students Against Destructive Decisions (something done by some other SADD chapters throughout the country as well), recognizing a broader focus, but their activities still reflected drunk driving as being the primary problem the group addressed. All three Arizona chapters emphasized teen drinking and driving, teen development and "good decisions," and general community responsibility and involvement.

The Student Substance Abuse Prevention Program in Worthington, Ohio, lived up to its name; it was primarily a program promoting abstinence from alcohol and other drugs. Although they cooperated with the SADD chapter on some projects where they had a community of interest, there was a real difference in their sense of purpose.

## **Outreach**

All the SADD chapters had an overall orientation which was much more outward than inward. All of the SADD groups emphasized activities designed to send their message to other students who were not members of the chapter. Most also promoted not drinking and driving to the general community, including adults, and cooperated with MADD's efforts to promote the same message. SADD activities frequently extended beyond the walls of the schools, with examples such as SADD presentations at junior high schools, booths at fairs for the general public or employees of large local companies, programs for parents, and even presentations and letters to state and local government officials. The SADD emphasis on outreach contrasted with that of the S.S.A.P.P. group interviewed in Worthington, Ohio, where the focus was much more on the members.

The SADD groups also practiced "outreach by inclusion." That is, they welcomed as members individuals whose own behavior did not (yet) meet the SADD ideals. Their point was that they couldn't succeed in getting others to not drink or drink and drive if they built walls around SADD and limited membership to people who did not engage in these risky behaviors.

Often, SADD chapters cooperated with other groups in sponsoring events which they didn't have the resources to promote by themselves. Many co-sponsored school activities with other anti-substance abuse groups, student government, PTAs, and student service clubs. Some sought (and got) donations from local merchants and national franchisers for big events such as alcohol-free prom parties or assemblies featuring prominent speakers.

Many of the groups had continuing relationships with local law enforcement officials, participating in such things as seat belt surveys, observing at sobriety checkpoints, and volunteering members to serve as role models in DARE programs at elementary schools. Mock Crashes, when put on, involved the cooperation of police, EMS, hospitals, and more.

## **Activities**

Although each chapter had a unique calendar of events, individual activities tended to show up in more than one chapter. This probably reflected the fact that, although chapters are free to implement whatever projects they can conceive (and some are quite creative), they rely to some extent on ideas and materials provided by state and national SADD offices, NHTSA, and their state's Governor's Office of Highway Safety.

Activities can be classified into several categories, according to their purposes. All the examples shown below were done by one or more of the chapters in the study:

### *Membership — Chapter Building and Maintenance*

- School newspaper articles or public address announcements welcoming new members
- Recruiting at freshman receptions

- Food and entertainment at organizing meetings
- Award ceremonies and banquets
- Members-only events such as attendance at regional and state conferences, holiday gift exchanges, picnics, and a ski trip

### *Leadership Training*

- State SADD member conferences and officer-only leadership training
- Conferences of other drug abuse prevention organizations
- Attendance at DUI checkpoints

### *Student-Oriented Anti-Drinking and Driving Activities*

- School assemblies with, for example, outside motivational speakers, local or state police, or alcohol-related crash victims
- Signs and posters on school grounds
- "Ghost Outs," "Grim Reaper"
- Black arm band day
- "Contract for Life" campaign
- "Red Ribbon" week, campaign, day, or parade
- "Prom Promise" campaign
- Prom-time "Safe Rides" program participation
- "Tree of Life" and "Wall of Tears" displaying pledges not to drink and drive.
- Candlelight vigils for drinking-driving crash victims
- Participating in tree planting memorial program
- Non-alcoholic "mocktails" at school dances
- Prom ticket inserts (often with money for a phone call)
- 16th birthday cards (with don't drink and drive message)
- Buckle-Up promotion (free Coke to belted students)
- Mock crashes
- Crashed car displays
- "SADD Cemetery" representing one day's alcohol-related crash victims
- Various locally developed presentations to junior high and elementary school students
- Homecoming flyers and homecoming-related activities
- Handing out candy kisses with don't drink and drive pull-tabs
- Vince and Larry involvement in various activities, for example, giving out "don't be a dum-dum" lollipops
- Graduation night and other alcohol-free parties
- "Senior Mailboxes" for students to drop off good wishes and don't drink and drive messages to graduating seniors
- Drunk driving simulator car
- Mugs, apples, or candy to thank all teachers for helping SADD operate
- Participating in DARE programs

### *Community-Oriented Anti-Drinking and Driving Activities*

- Letters to government officials, for example, legislators, district attorneys
- Testifying at government hearings, for example, state legislature, city council
- TV/radio appearances; news conferences
- Articles written for local newspapers
- Billboards or banners
- Prevention Fair displays
- Mall displays
- Participating in "Safe Rides" program

### *Non-Alcoholic Alternative Activities*

- "Lock In" parties
- Non-alcoholic dances and parties
- Prom parties
- Recreational outings for all students
- Non-alcoholic "tailgate" party

### *Fund Raisers*

- "Candy Grams"
- SADD cookie sales
- "Kiss a Pig" (where faculty members publicly kiss a pig if fundraising goal is met)
- SADD T-shirt, other merchandise sales
- Silent auctions
- Ribbon cutting for MADD
- Car washes

### *Public Service*

- Seat belt survey
- Serving as Safe Rides volunteer drivers
- Participating in fund raising for other community service groups
- Participating in "Chain of Life" anti-drug abuse activities
- Participating in "Mock Olympics"
- Party for elementary school crossing guards
- "Rain Forest" fund raiser
- Fund raiser for homeless
- Adopting homeless families or children for holidays
- "Booster Club" fund raiser
- Donations to other public services, for example, "March of Dimes," aid for flood victims, local mental health center
- Participating in community CPR workshop

## **Support**

Typically, the SADD groups were self-sustaining, with annual budgets of \$1,000 to \$2,000, funded primarily by a variety of fund-raising activities carried on by the members. Most chapters did not collect dues from their members. For those who did, the amount was very small and intended to keep track of active members rather than to raise money. Most chapters received support from businesses, both local and national, for specific activities. Sometimes conference expenses were subsidized by donations or drug-free school grants, and sometimes the students paid their own expenses. The faculty advisors were unpaid.

It appeared that, other than conference trips, big-name speakers were the most expensive thing SADD groups do. Usually, these appearances had corporate funding. One speaker's appearance at Worthington Kilbourne, for example, was funded by a beer company. Taco Bell sponsored a speaker at Franklin, Wisconsin. The \$2,000 honorarium for a visiting speaker at Cortez High School in Phoenix was funded by a grant won by the advisor.

Through their own support of other charitable activities and of needy people in their communities, SADD groups were more often concerned with distributing funds than with acquiring them.

In contrast, the S.S.A.P.P. program at Worthington Kilbourne was heavily funded by school system and grant money. Faculty advisors received a stipend from the school system, and the program received \$1,000 every year from a community anti-substance abuse program.

## **In-School Surveys**

### **Response Descriptions**

Each school was requested to administer the two-page surveys to all students or, if this was impossible, to use a sampling plan that reached an unbiased and representative subset of all students. In nearly all cases, surveys were administered at one specific point in a school day where all students would be available (such as homeroom, one class period in which all students should be in class, or lunch). Surveys and written instructions were distributed to the teachers, who were responsible for administering the surveys and returning them to the contact person within the school who assumed overall responsibility for the project. Surveys were completed anonymously, and students had the opportunity to refuse to participate. Completed surveys were then shipped back to us for review, data entry, and processing.

Of the surveys received, less than one percent were discarded completely because they had been filled out in a non-responsive way (for example, written comments rather than answers, or a pattern of absurd answers throughout). A comparably small number of other surveys had answers to the nine attitude items rejected. They were rejected because all items were given the same score; the phrasing of the items was such that this pattern was more likely

to represent the absence of judgment rather than consistency of opinion. Some other individual answers were rejected due to idiosyncratic nonresponsiveness.

In all, 17,484 surveys were accepted for analysis. Of those, 297 (1.7 percent) did not give the respondent's sex or grade. Those surveys were eliminated from many analyses because the primary unit of analysis was sex and grade within school. Of the remaining 17,187 surveys, 7,720 were completed in 1994 and 9,467 were done in 1995.

Table 3-3 shows the combined responses for both years along with school enrollment figures. Enrollment figures are sums for the two years. In all, 4,070 responses (24 percent) were from Arizona, 6,263 (36 percent) were from Ohio, and 6,854 (40 percent) were from Wisconsin. By grade, responses were distributed: 5,072 (30 percent) ninth grade, 4,624 (27 percent) tenth grade, 3,978 (23 percent) eleventh grade, and 3,513 (20 percent) twelfth grade. Eight thousand five hundred forty (49.7 percent) were from boys, and 8,647 (50.3 percent) were from girls. Schools with active SADD chapters (six in 1994 and seven in 1995) returned 9,682 surveys (56 percent); schools without such programs (six in 1994 and five in 1995) returned 7,505 surveys (44 percent). The SADD schools for the two years were those listed in Table 3-1. For 1995, McClintock was coded as a SADD school because of its new and active program; Worthington Kilbourne was also coded as a SADD school in 1995 based on possible residual effects of the SADD chapter plus possible effects of the S.S.A.P.P. program.

Across both years combined, responses were received from about 53 percent of all students enrolled in the schools. Response rates were comparable across grades, ranging from a high of 56 percent for sophomores down to 49 percent for seniors. Nine schools attempted to get responses from all students; of those, return rates ranged from a low of 60 percent to a high of 79 percent. Of the others, all in Arizona: Carl Hayden High School sampled in 1994 with a random selection of classes in which all students were equally likely to be enrolled, reaching about 9 percent of the students; they had a number of survey administration difficulties in 1995 which resulted in the return of only a small proportion of the expected surveys (6 percent of the enrollment, including none from seniors). Marcos de Niza High School deliberately sampled, reaching 33 percent and 41 percent of enrolled students each year. McClintock High School sampled a relatively small percentage (9 percent) of the enrollment in the first year; in the second year, the new SADD chapter took over survey administration, attempted to reach all students, and returned surveys from 49 percent.

The goal of the study design was to have a factorial design, with two SADD schools and matched comparison schools in each state for both survey years, and with comparable numbers of respondents from each grade (and sex) in each school. The design was best realized in Ohio and Wisconsin. In Arizona in the first year, the comparison schools contributed relatively few completed surveys; in the second year, one comparison school had become a SADD school. Thus, in the pages below, data are summarized for all completed surveys, and statistical tests of significance were performed for all data and for the Ohio-Wisconsin subset. In most cases, the results of the statistical tests were consistent and are reported without qualification. In cases where the results were different for the whole sample and for the Ohio-Wisconsin subset, the differences are noted and discussed.

Table 3-3. School Responses and Enrollments--Combined Years

State	School	Grade				TOTAL
		9th	10th	11th	12th	
Cortez HS	Responses	375	340	302	254	1,271
	Enrollment	499	426	448	349	1,722
	Percent	75%	80%	67%	73%	74%
Carl Hayden HS	Responses	109	61	101	72	343
	Enrollment	1,300	1,200	1,100	1,000	4,600
	Percent	8%	5%	9%	7%	7%
Marcos de Niza HS	Responses	444	469	227	234	1,374
	Enrollment	1,004	889	928	878	3,699
	Percent	44%	53%	24%	27%	37%
McClintock	Responses	234	329	285	234	1,082
	Enrollment	1,021	967	890	862	3,740
	Percent	23%	34%	32%	27%	29%
Arizona Total	Responses	1,162	1,199	915	794	4,070
	Enrollment	3,824	3,482	3,366	3,089	13,761
	Percent	30%	34%	27%	26%	30%
Worthington Kilbourne HS	Responses	479	376	340	376	1,571
	Enrollment	756	669	609	587	2,621
	Percent	63%	56%	56%	64%	60%
Dublin Coffman HS	Responses	871	725	698	554	2,848
	Enrollment	1,280	1,066	941	934	4,221
	Percent	68%	68%	74%	59%	67%
Philo HS	Responses	362	292	176	178	1,008
	Enrollment	454	363	221	230	1,268
	Percent	80%	80%	80%	77%	79%
Fairfield Union HS	Responses	230	231	199	176	836
	Enrollment	315	292	313	271	1,191
	Percent	73%	79%	64%	65%	70%
Ohio Total	Responses	1,942	1,624	1,413	1,284	6,263
	Enrollment	2,805	2,390	2,084	2,022	9,301
	Percent	69%	68%	68%	64%	67%
Franklin HS	Responses	438	428	350	283	1,499
	Enrollment	563	534	478	424	1,999
	Percent	78%	80%	73%	67%	75%
Oconomowoc HS	Responses	446	463	498	454	1,861
	Enrollment	714	681	668	684	2,747
	Percent	62%	68%	75%	66%	68%
Oshkosh West HS	Responses	658	516	481	381	2,036
	Enrollment	772	680	710	576	2,738
	Percent	85%	76%	68%	66%	74%
Menasha HS	Responses	426	394	321	317	1,458
	Enrollment	579	532	482	434	2,027
	Percent	74%	74%	67%	73%	72%
Wisconsin Total	Responses	1,968	1,801	1,650	1,435	6,854
	Enrollment	2,628	2,427	2,338	2,118	9,511
	Percent	75%	74%	71%	68%	72%
TOTAL	Responses	5,072	4,624	3,978	3,513	17,187
	Enrollment	9,257	8,299	7,788	7,229	32,573
	Percent	55%	56%	51%	49%	53%

Note: Enrollment and response figures are sums, 1993/1994 plus 1994/1995

In general, the schools attempted to reach all their students or to reach a sample selected to be representative of all students. The groups most likely to have been excluded from the survey are students who were absent or who were involved in activities that kept them out of the classrooms when the surveys were administered. These students are not likely to be very different from the students who completed the survey.

Also excluded from the survey were teens who lived in the high school areas but did not attend these high schools — ones who had dropped out of school or who attended other schools. As part of our background information on the schools, we asked about dropout rates and about how many and what kind of the area students would be attending alternate schools.

Our question on dropout rates seemed to receive different interpretations in different schools. Figures cited ranged from less than one percent, total, to up to 15 percent for just 18-year-olds. A more empirical measure of dropouts, which is affected by other factors as well, can be calculated as just the percentage that senior enrollment is of freshman enrollment. For the 11 schools providing enrollments by grade, the median (senior/freshman) figure was 75%. One value was above 90% (96%) and only one was less than 70% (51%). The last figure was in one rural school which had a very low figure for juniors as well. The school listed two alternate schools which draw students from its area, but described its student body as fully representative of all students in the area.

All the schools described their students as representative of all students in their areas. Their estimates of the proportion of all area students attending their schools had a median of 90% and ranged from highs of 99% (two schools) to 51% (the only value below 75%). The lowest figure came in a school in a city with another public high school and a large parochial high school, and it may have reflected the percentage of all city students. Schools were asked whether they had magnet programs which would make their student bodies non-representative or if there were alternate schools which drew specific types of students away from them. All indicated that these conditions did not exist for them.

Several questions on the survey covered demographic and driving-related variables such as student age, age licensed to drive, and number and length of driving trips per week. The average age of all respondents was about 16 years seven months. Seventy-five percent had driven a motor vehicle on the street. Forty-seven percent were licensed to do so; they had acquired their licenses at an average of about 16 years five months of age (there were only minor differences between states) and had held them about 14 months when they completed the surveys. These results, detailed in Appendix A, indicated substantial similarity between students in the SADD and the comparison schools.

## Peer-to-Peer Organizations

The tables in the next pages summarize responses to in-school surveys. They are based on averages for all respondents who fall into the indicated categories. For questions answered by all respondents, values represent a minimum of about 800 responses (Arizona seniors) and a total of up to 17,484 responses.

The statistical significance of differences shown in the tables were assessed using general linear model analysis of variance (Systat for Windows, Version 5, 1992). The primary independent variable was SADD school vs. comparison school. Other independent variables were state, school pair within state, grade, age, sex, and year<sup>1</sup>. These other variables were included in each model to adjust, or correct, for unbalanced sample sizes in the makeup of the data for the SADD and the comparison schools. They were also included because they are factors along which differences in the survey responses might legitimately be expected. Each statistical model for each of the tested independent variables was run for the entire data set. In order to test the robustness of the overall statistics, each model was also run for data from only Ohio and Wisconsin (13,344 completed surveys). As noted above, the realized design in those two states was "cleaner," more nearly factorial, with each school staying in the same SADD/comparison category in both years and with comparable percentages of respondents. Overall results are reported. Where the results of the subanalyses were different, qualifications are noted.

Table 3-4 confirms that the SADD chapters were well-known within their schools and that, in most cases, schools without SADD chapters did not have peer-to-peer organizations recognized by the students as emphasizing anti-drinking and driving. Overall, 94% of the students in the SADD schools knew they had such an organization and 82% filled in the name "SADD." In the other schools, 33% of the students felt they had such an organization, and only 7% identified it as SADD. In SADD schools, 6.5 percent of students (9.7 percent girls, 3.3 percent boys) were members of the organization. In comparison schools, 3.2 percent of the students said they belonged to an anti-drinking and driving organization in the school. (All SADD/comparison differences were statistically significant,  $p < .001$ .)

Two comparison schools had quite high identification rates for a peer-to-peer organization. Fifty-two percent of Menasha students identified such a program. Most often, they cited a program called STOP, which is a peer-to-peer organization whose primary focus is anti-drug; only 11 percent cited SADD. Also, 42% of Dublin Coffman students said they had such a program; they do, in fact, have an active Teen Institute program, but it does not emphasize anti-drinking and driving. Only 7 percent named SADD as their program.

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<sup>1</sup> Grade and age were both included in many of the analyses. Although they were highly correlated, for some questions (such as driving-related factors) age seemed more important and for others (such as exposure to activities in school) grade seemed more relevant. The analysis approach allowed both to be included and their relative contributions to be assessed.

McClintock High School, which created a separate, active SADD program in the 1994-95 school year, showed a major change in recognition figures. In 1994, 32 percent of students said they had a peer-to-peer anti-drinking and driving organization and 20 percent said it was SADD<sup>2</sup>; in 1995, the numbers had jumped to 92 percent and 78 percent, respectively.

Table 3-4. Student Awareness of, Involvement with Student Organization Against Drinking and Driving<sup>3</sup>

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	88.3	90.3	84.9	88.6	86.5	90.0	88.2
	76.4	78.6	74.5	77.1	73.4	80.4	76.8
	6.2	5.7	7.0	7.6	3.9	9.0	6.5
Ohio	61.6	61.0	59.1	63.3	58.7	63.9	61.3
	30.9	36.5	30.3	37.1	32.6	34.5	33.5
	8.3	6.4	6.1	5.1	3.0	10.3	6.6
Wisconsin	65.4	61.7	63.5	63.6	60.0	67.0	63.6
	48.4	46.8	46.6	46.6	42.3	51.9	47.1
	0.9	3.3	3.7	3.7	1.2	4.4	2.8
SADD	91.8	94.4	95.4	96.5	91.8	96.6	94.2
	77.2	82.7	84.2	84.1	76.8	86.3	81.5
	5.1	6.7	7.6	7.4	3.3	9.7	6.5
None	35.0	29.9	32.3	34.9	30.8	35.5	33.1
	6.8	7.3	5.8	9.7	7.1	7.7	7.3
	4.7	2.7	2.8	2.4	1.5	5.0	3.2
TOTAL	69.3	68.9	67.0	69.2	65.7	71.5	68.6
	48.1	51.4	47.3	50.1	45.9	52.5	49.2
	4.9	5.0	5.3	5.1	2.5	7.7	5.1

Worthington Kilbourne, by comparison, retained SADD recognition even though the chapter had essentially vanished during the second year. Recognition of any program dropped slightly, from 95 percent to 83 percent from the first to the second year. Identification of it as

<sup>2</sup> Prior to creating a separate, active SADD program, McClintock had had a combined Key Club-SADD chapter, but it did not emphasize the SADD component.

<sup>3</sup> Cell entries are percents of all students who: Say their school has a student organization against drinking and driving; Identify the group as SADD; and Belong to their student organization.

SADD dropped more sharply, from 74 percent to 45 percent, but this was still much higher than any school in the comparison group.

Taken together, these figures confirm that the SADD programs were indeed present, active, and known in their schools. They also reaffirm that high schools have a number of other programs going on, some emphasizing anti-drug messages, that are perceived as addressing drinking and driving. Again, SADD programs are just one component of the school's and community's efforts.

## **In-School Activities**

The next tables summarize student perceptions of activities in their schools that are directly or indirectly linked with underage drinking and drinking and driving. As shown in Tables 3-5 through 3-8, students in schools with the active SADD programs were aware of more activity in their schools than were the students in the comparison schools. Finding this result was a critical link in establishing a chain by which these SADD chapters, in these schools, might influence attitudes, behaviors, and traffic safety consequences for all students. That is, because students in the SADD schools really were exposed to more messages and activities, it was legitimate to ask whether that difference translated to greater safety-related consequences for those students vs. students in the comparison schools.

Three questions in the survey (16, 17, and 18) measured general student perceptions of safety themes and activities in their schools. Question 16 asked, for seven topics, whether students recalled hearing about them in school. Question 17 asked how (that is, in what ways, through what channels) students had heard messages targeting underage drinking or drinking and driving. Finally, question 18 asked whether students recalled seeing or participating in specific in-school activities against underage drinking or drinking and driving.

The numbers of topics, ways, or activities recalled by students are summarized in Tables 3-5, 3-6, and 3-7, respectively. Students in active SADD schools remembered "hearing about" issues more frequently. Of the seven possible topics, SADD-school students recalled an average of 4.4 and comparison-school students recalled only 4.1. Of eight listed ways of hearing messages about underage drinking and drinking and driving, teens in active-SADD schools cited an average of 4.5 vs. 3.8 in the comparison schools. Finally, students in SADD schools recalled an average of 1.9 of the eight specific activities, nearly twice as many as

students in the comparison schools (1.1).<sup>4</sup> (All differences were statistically significant,  $p < .001$ .)

Table 3-5. Average Number of Drinking/Driving/Drug-Related Topics Heard About in School

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	3.8	4.3	4.2	4.3	4.0	4.2	4.1
Ohio	4.0	4.2	4.1	4.3	4.0	4.3	4.1
Wisconsin	4.3	4.5	4.6	4.7	4.3	4.6	4.5
SADD	4.1	4.5	4.6	4.6	4.3	4.5	4.4
None	3.9	4.1	4.1	4.3	3.9	4.2	4.1
<b>TOTAL</b>	<b>4.0</b>	<b>4.3</b>	<b>4.3</b>	<b>4.4</b>	<b>4.1</b>	<b>4.4</b>	<b>4.3</b>

Table 3-6. Average Number of Ways Students Have Heard About Drinking/Driving Topics in School

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	3.5	4.2	4.3	4.5	4.0	4.2	4.1
Ohio	3.6	4.1	4.1	4.5	3.9	4.1	4.0
Wisconsin	3.9	4.6	4.8	4.8	4.3	4.6	4.5
SADD	3.8	4.6	4.8	5.0	4.4	4.6	4.5
None	3.4	3.9	4.0	4.3	3.7	4.0	3.8
<b>TOTAL</b>	<b>3.7</b>	<b>4.3</b>	<b>4.4</b>	<b>4.7</b>	<b>4.1</b>	<b>4.3</b>	<b>4.2</b>

<sup>4</sup> There were other differences in the response patterns to these three items as well. For example, girls routinely recalled more topics, ways of presenting them, and specific activities than did boys. Also, there were differences between the states which reflected different specific response patterns in the schools (likely related to different specific activities performed in each) and the fact that more than five-eighths of the Arizona data occurred in SADD schools vs. just half in Ohio and Wisconsin. Students in higher grades recalled more than students in lower grades, possibly due to answering for more things occurring in previous years (for which older students had more experience). These differences are visible in these tables, but they are not specifically discussed here.

Table 3-7. Average Number of Activities Against Drinking/Driving Seen in Last Year in School

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	1.7	2.3	2.4	3.0	2.1	2.5	2.3
Ohio	1.4	1.6	1.6	1.8	1.5	1.6	1.6
Wisconsin	0.9	1.1	1.2	1.2	1.0	1.1	1.1
SADD	1.4	1.9	2.1	2.4	1.8	2.0	1.9
None	1.1	1.1	1.1	1.2	1.1	1.1	1.1
<b>TOTAL</b>	<b>1.3</b>	<b>1.6</b>	<b>1.6</b>	<b>1.8</b>	<b>1.5</b>	<b>1.6</b>	<b>1.5</b>

Responses for the specific topics, ways, and activities are summarized in Table 3-8. For topics, overall recognition rates were very high. An average of 61 percent of students recognized each topic (only 3-D Month seemed to be unfamiliar in the schools). Students in SADD schools recalled topics more often than students in the comparison schools. Overall, the difference was 63 percent vs. 58 percent. For the first five topics, which are directly relevant to the goals of SADD, the difference was slightly greater, 73 percent vs. 67 percent; all differences were statistically significant,  $p < .001$ .

In the middle of Table 3-8, recall percentages are given for each of the eight ways in which students might have heard anti-drinking and driving messages in their schools. The average recall rate for students in SADD schools was 56 percent, much higher than in the comparison schools (47 percent). The five ways from Posters to Another Student were ones used frequently by the SADD chapters. For them, recall showed a stronger difference favoring SADD schools, averaging 59 percent vs. 47 percent; all differences were statistically significant,  $p < .001$  except for hearing from another student,  $p < .01$ .

Recall rates for specific individual activities are given at the bottom of Table 3-8. Recall rates were much lower than for topics or ways, consistent with the earlier focus group results which showed that only some activities occurred in any year even for the most active SADD chapters. None of the SADD chapters reported having VIP (Victim Impact Panel) assemblies or emphasizing Red Ribbon Month. For the remaining six activities, undertaken by at least some of the chapters, average recognition rates were 29 percent in the SADD schools, only 17 percent in the comparison schools; all differences were statistically significant,  $p < .001$  except for prom/graduation alcohol-free parties.

To sum up, there were greater levels of emphasis on underage drinking and drinking and driving, as recalled by all students, in the SADD schools vs. the comparison schools. These

differences correspond to specific activities reported by the SADD chapters, and at the very least they confirm that active SADD chapters do successfully place their message in front of all students in their schools.

Table 3-8. Percent Students Noticing General Safety, Anti-Drinking, and Anti-Drinking and Driving Topics and Activities in School

	State			Program		TOTAL
	Ariz.	Ohio	Wisc.	SADD	None	
<b>Topics Heard in School</b>						
Underage drinking	70.7%	80.2%	84.8%	80.9%	78.4%	79.8%
Drinking and driving	84.2%	82.2%	84.7%	87.0%	79.4%	83.7%
Illegal drugs	76.4%	80.7%	82.8%	82.1%	78.6%	80.5%
Illegal drugs and driving	57.3%	60.0%	60.7%	61.8%	56.8%	59.6%
Designated Driver programs	46.4%	42.5%	55.1%	53.4%	41.9%	48.4%
3-D Month	18.7%	18.7%	16.0%	19.8%	15.3%	17.8%
Peer counseling programs	57.9%	44.7%	65.1%	56.1%	55.6%	55.9%
<b>Average "hearing" each topic</b>	<b>58.8%</b>	<b>58.4%</b>	<b>64.2%</b>	<b>63.0%</b>	<b>58.0%</b>	<b>60.8%</b>
<b>Ways Heard About Drinking and Driving</b>						
In Driver Ed	42.0%	47.4%	68.6%	56.9%	47.8%	52.8%
In another class	50.5%	63.6%	68.8%	63.0%	58.8%	61.1%
Posters on bulletin boards	61.8%	61.4%	64.8%	67.3%	57.1%	62.9%
Special presentations	57.1%	46.7%	54.6%	63.0%	38.5%	52.3%
Pamphlets etc.	40.8%	42.7%	47.3%	47.7%	39.5%	44.1%
School paper etc.	61.6%	50.6%	48.0%	58.0%	44.6%	52.2%
Another student	53.6%	56.1%	58.2%	57.1%	55.4%	56.4%
Teacher, informally	39.7%	37.2%	37.7%	38.8%	37.4%	38.2%
<b>Average "hearing" each way</b>	<b>50.9%</b>	<b>50.7%</b>	<b>56.0%</b>	<b>56.5%</b>	<b>47.4%</b>	<b>52.5%</b>
<b>Activities Seen in School</b>						
VIP assembly	10.7%	8.5%	4.8%	9.6%	6.0%	8.0%
Assembly w. outside speaker	38.6%	24.3%	31.9%	40.3%	18.3%	30.7%
Ghost-Out program	21.6%	10.1%	6.6%	15.0%	6.8%	11.4%
Crashed car display	49.0%	12.7%	7.3%	27.7%	8.1%	19.2%
Prom/grad alc-free parties	28.2%	34.8%	27.1%	30.2%	30.2%	30.2%
Mock Crash	19.7%	16.0%	4.3%	17.1%	6.0%	12.2%
Red Ribbon campaign	52.8%	46.4%	22.3%	44.6%	30.3%	38.4%
3-D Month	7.6%	6.6%	4.0%	7.2%	4.6%	6.1%
<b>Average "seeing" each activity</b>	<b>28.5%</b>	<b>19.9%</b>	<b>13.5%</b>	<b>24.0%</b>	<b>13.8%</b>	<b>19.5%</b>

## Student (Respondent) Knowledge and Attitudes

One step, possibly the first step, in improving driving safety for teens is in increasing their knowledge of relevant laws and in changing their attitudes toward alcohol, alcohol-related activities, and alcohol and driving. This section looks at these measures.

All three states included in the study had "zero tolerance" laws for teens. In Arizona and Wisconsin, the limit was .00% BAC; in Ohio, it was .02%. The survey question allowed choices of .00%, .01%, .02%, .05%, .08%, and .10%. Respondents who chose one of the three lowest values tended to choose any one of the three without attention to the fine detail of their state's law; therefore, all were scored as correct.

Overall, nearly three-fourths (72 percent) of all students knew of the lower BAC limit for underage drivers. There were differences between states, with Ohio students most likely to answer correctly (79 percent vs. 66 percent in Arizona and 69 percent for Wisconsin). There was a gradual improvement with grade level, from 68 percent for freshmen to 76 percent for seniors. The difference between SADD and comparison schools was moderate (5 percent), and students in the comparison schools were more likely to answer correctly. (In all the focus group sessions, although the teens knew the lower BAC law, they did not indicate that it was part of their message to the school. They stressed simply not-drinking-in-any-amount and driving.)

The surveys included nine statements to which students were to indicate how much they agreed or disagreed. The scale was 1, Strongly agree; 2, Pretty much agree; 3, Somewhat agree; 4, Somewhat disagree; 5, Pretty much disagree; and 6, Strongly disagree. Thus averages below 3.5 showed net agreement and scores above 3.5 showed net disagreement. Table 3-9 lists the nine attitude statements. Shown are mean agreement scores for all students in the comparison schools, for all students in the SADD schools, and for the SADD members alone.

For eight of the items, average agreement/disagreement scores were toward the direction opposing teen drinking or drinking and driving and favoring safe alternatives. The last item, 14f, showed moderate agreement, but the response is difficult to interpret because it asked about conditions in their communities rather than a value judgment about those conditions (although SADD members believe it is easier to obtain alcohol than other students).

In terms of nearness to the ends of the scale, items 14a and 14g received the most extreme responses (both negative). Students believe it is not the case that other teens would ridicule them for not drinking alcohol (14g). Also, very few teens feel that it isn't dangerous to drive after drinking a couple of beers (14a). For both items, differences between comparison and SADD schools were small and were not statistically significant. SADD students showed stronger disagreement to 14a than the average of students in comparison or SADD schools; the difference was more than 0.4 scale points.

Item 14b, which said that there was nothing wrong with high school students drinking as long as they don't drive, was disagreed with by SADD members, slightly agreed with by all

SADD school students, and slightly more agreed with by comparison school students. The difference between comparison and SADD schools was statistically significant overall ( $p < .001$ ), for Ohio and Wisconsin together ( $p < .001$ ), and for Ohio and Wisconsin 1994 alone ( $p < .01$ ), but not for Ohio and Wisconsin in 1995.

The next two items were 14c, "I would not accept a ride with a friend who had been drinking," and 14d, on the legal definition of underage drinking and driving. Students in all schools agreed strongly, and there were no significant differences between comparison and SADD schools. SADD members agreed more strongly with both items than did other students.

Item 14e stated that "non-alcohol parties can be just as much fun as parties at which alcohol is served." SADD members strongly agreed with this item, followed by all the students at the SADD schools, followed by students at the comparison schools. The comparison vs. SADD school differences were statistically significant overall ( $p < .001$ ), for Ohio and Wisconsin overall ( $p = .001$ ) and in 1994 ( $p < .01$ ) but not in 1995.

The next item dealt with the ease of alcohol purchase within the respective communities. SADD members, followed by SADD school students and then comparison school students, strongly agreed that alcohol was easy to buy. All tests of comparison vs. SADD schools were significant ( $p < .001$  except Ohio and Wisconsin 1995,  $p < .01$ ). Such differences may reflect differences in attitude or belief and/or actual liquor control differences between the communities.

Students in all schools, and SADD members in particular, agreed strongly that their parents would be extremely upset if they were caught drinking (item 14h). The difference between students in comparison and SADD schools, although very small in Table 3-9, was statistically significant ( $p < .001$  for all but Ohio and Wisconsin in 1995, n.s.).

Finally, item 14i said that the fear of getting arrested for DUI was enough to keep "me" from doing it. SADD students showed the most agreement with this item, followed by students in the comparison schools and then all students in the SADD schools. The comparison vs. SADD difference was statistically significant (all tests were significant except Ohio and Wisconsin in 1994).

In order to examine the nine attitude items for common themes, they were subjected to a factor analysis (SPSS version 4.0, 1992). Three factors were identified and subjected to a Varimax orthogonal rotation. The first was named "society's official views" on teens and alcohol, with emphasis on negative consequences. The second was called "alcohol is part of my social life." The third was virtually identical to item 14f, ease of teens obtaining alcohol. The first two factors were analyzed for statistical significance by the same linear models procedures used for other data. A number of factors were statistically significant, but the differences between SADD and comparison schools was very small and not significant. The factor analysis is presented in more detail in Appendix B.

Table 3-9. Agreement Levels to Nine Attitude Statements  
(1=Strongly agree ... 6=Strongly disagree)

Item	Agree/Disagree Score		
	Comparison Schools	SADD Schools	
		All Students	SADD Members
14a. Driving after drinking a couple of beers isn't really dangerous	4.58	4.58	5.02
14b. There is nothing wrong with high school students drinking, as long as they don't drive	3.04	3.15	3.80
14c. I would not accept a ride with a friend who has been drinking	2.32	2.28	1.85
14d. In this state, one beer is enough to make a teenage driver legally "Under the influence of alcohol"	2.77	2.80	2.33
14e. Non-alcoholic parties can be just as much fun as parties at which alcohol is served	2.60	2.51	1.78
14f. It is very easy for teenagers to buy beer in this community	2.75	2.62	2.37
14g. My friends would make fun of me if I didn't drink	5.17	5.21	5.31
14h. My parents would be extremely upset if I was caught drinking	2.28	2.25	1.93
14i. The fear of getting arrested for driving drunk is enough to stop me from doing it	2.39	2.44	2.18

Responses for the nine individual attitude items are summarized in Tables 3-10 through 3-18 below. Item-by-item, there were minor differences in levels of agreement between states and by grade. Items 14b, 14h, 14g, 14d, and 14e showed gradual trends from freshmen to seniors consistent with increasing age or maturity; the other four items showed no such patterns.

The largest and most consistent differences in agreement were between males and females. Responses of males showed more agreement for items 14a, 14g, and 14b, that is, more agreement that driving after drinking isn't dangerous, drinking by high school students is okay, and friends would make fun of them for not drinking. Females agreed more with

statements 14e (non-alcoholic parties can be as much fun), 14i (fear of arrest keeps them from drinking and driving), 14c (they won't ride with a drinking driver), 14d (one beer puts teen drivers over the DWI limit), and 14h (parents would disapprove if they were caught drinking). (All differences were statistically significant,  $p < .001$ .)

Table 3-10. Agree/Disagree: 14a. Driving after drinking a couple of beers isn't really dangerous  
(1=Strongly agree ... 6=Strongly disagree)

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	4.46	4.72	4.82	4.71	4.49	4.84	4.67
Ohio	4.49	4.69	4.71	4.35	4.27	4.84	4.55
Wisconsin	4.40	4.61	4.62	4.63	4.28	4.85	4.56
SADD	4.44	4.69	4.71	4.52	4.33	4.83	4.58
None	4.47	4.67	4.64	4.51	4.32	4.86	4.58
<b>TOTAL</b>	<b>4.45</b>	<b>4.68</b>	<b>4.68</b>	<b>4.55</b>	<b>4.33</b>	<b>4.84</b>	<b>4.58</b>

Table 3-11. Agree/Disagree: 14b. There is nothing wrong with high school students drinking, as long as they don't drive  
(1=Strongly agree ... 6=Strongly disagree)

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	3.28	3.18	3.20	3.04	3.12	3.25	3.19
Ohio	3.30	3.20	3.10	2.74	2.93	3.29	3.11
Wisconsin	3.30	3.09	2.86	2.80	2.87	3.20	3.04
SADD	3.30	3.18	3.12	2.90	3.01	3.29	3.15
None	3.28	3.12	2.92	2.75	2.88	3.19	3.04
<b>TOTAL</b>	<b>3.29</b>	<b>3.16</b>	<b>3.02</b>	<b>2.83</b>	<b>2.95</b>	<b>3.25</b>	<b>3.10</b>

Table 3-12. Agree/Disagree: 14c. I would not accept a ride with a friend who has been drinking

(1=Strongly agree ... 6=Strongly disagree)

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	2.32	2.25	2.21	2.19	2.39	2.10	2.25
Ohio	2.24	2.20	2.21	2.42	2.45	2.07	2.26
Wisconsin	2.35	2.37	2.37	2.33	2.50	2.21	2.36
SADD	2.30	2.25	2.25	2.31	2.46	2.11	2.28
None	2.30	2.32	2.31	2.35	2.46	2.17	2.32
<b>TOTAL</b>	<b>2.30</b>	<b>2.28</b>	<b>2.28</b>	<b>2.33</b>	<b>2.46</b>	<b>2.13</b>	<b>2.30</b>

Table 3-13. Agree/Disagree: 14d. In this state, one beer is enough to make a teenage driver legally "under the influence of alcohol"

(1=Strongly agree ... 6=Strongly disagree)

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	2.92	3.00	2.72	2.83	2.98	2.77	2.88
Ohio	2.99	2.51	2.56	2.55	2.88	2.47	2.68
Wisconsin	3.05	2.82	2.73	2.56	2.96	2.67	2.82
SADD	2.94	2.80	2.71	2.64	2.97	2.62	2.80
None	3.08	2.69	2.62	2.59	2.90	2.62	2.77
<b>TOTAL</b>	<b>3.00</b>	<b>2.76</b>	<b>2.67</b>	<b>2.62</b>	<b>2.94</b>	<b>2.62</b>	<b>2.78</b>

Table 3-14. Agree/Disagree: 14e. Non-alcoholic parties can be just as much fun as parties at which alcohol is served  
(1=Strongly agree ... 6=Strongly disagree)

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	2.56	2.62	2.56	2.65	2.96	2.25	2.60
Ohio	2.44	2.46	2.60	2.71	2.91	2.15	2.54
Wisconsin	2.40	2.53	2.63	2.58	2.92	2.14	2.53
SADD	2.46	2.50	2.52	2.59	2.90	2.14	2.51
None	2.44	2.56	2.70	2.71	2.96	2.21	2.60
<b>TOTAL</b>	<b>2.45</b>	<b>2.53</b>	<b>2.60</b>	<b>2.64</b>	<b>2.93</b>	<b>2.17</b>	<b>2.55</b>

Table 3-15. Agree/Disagree: 14f. It is very easy for teenagers to buy beer in this community  
(1=Strongly agree ... 6=Strongly disagree)

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	2.77	2.55	2.42	2.32	2.53	2.54	2.54
Ohio	2.74	2.66	2.57	2.53	2.68	2.60	2.64
Wisconsin	2.93	2.84	2.74	2.59	2.81	2.76	2.79
SADD	2.79	2.62	2.54	2.44	2.66	2.58	2.62
None	2.87	2.83	2.69	2.59	2.75	2.75	2.75
<b>TOTAL</b>	<b>2.82</b>	<b>2.70</b>	<b>2.61</b>	<b>2.51</b>	<b>2.70</b>	<b>2.65</b>	<b>2.68</b>

Table 3-16. Agree/Disagree: 14g. My friends would make fun of me if I didn't drink  
 (1=Strongly agree ... 6=Strongly disagree)

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	5.17	5.25	5.32	5.33	5.07	5.43	5.26
Ohio	5.04	5.19	5.26	5.19	4.93	5.40	5.16
Wisconsin	5.07	5.18	5.21	5.30	4.95	5.42	5.18
SADD	5.08	5.23	5.29	5.29	4.99	5.41	5.21
None	5.08	5.16	5.22	5.24	4.94	5.41	5.17
<b>TOTAL</b>	<b>5.08</b>	<b>5.20</b>	<b>5.25</b>	<b>5.27</b>	<b>4.97</b>	<b>5.41</b>	<b>5.19</b>

Table 3-17. Agree/Disagree: 14h. My parents would be extremely upset if I was caught drinking  
 (1=Strongly agree ... 6=Strongly disagree)

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	2.21	2.29	2.43	2.87	2.47	2.35	2.41
Ohio	2.03	2.07	2.19	2.66	2.31	2.10	2.20
Wisconsin	2.05	2.17	2.21	2.60	2.36	2.11	2.24
SADD	2.08	2.18	2.23	2.65	2.36	2.15	2.25
None	2.08	2.14	2.27	2.72	2.38	2.18	2.28
<b>TOTAL</b>	<b>2.08</b>	<b>2.16</b>	<b>2.25</b>	<b>2.68</b>	<b>2.37</b>	<b>2.16</b>	<b>2.27</b>

Table 3-18. Agree/Disagree: 14i. The fear of getting arrested for driving drunk is enough to stop me from doing it  
(1=Strongly agree ... 6=Strongly disagree)

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	2.41	2.32	2.25	2.39	2.51	2.19	2.35
Ohio	2.54	2.41	2.41	2.52	2.65	2.30	2.48
Wisconsin	2.45	2.41	2.36	2.37	2.53	2.26	2.40
SADD	2.52	2.40	2.35	2.44	2.62	2.25	2.44
None	2.42	2.38	2.35	2.41	2.50	2.27	2.39
<b>TOTAL</b>	<b>2.48</b>	<b>2.39</b>	<b>2.35</b>	<b>2.43</b>	<b>2.57</b>	<b>2.26</b>	<b>2.42</b>

Taken together, the attitude items showed relatively small differences between SADD and comparison schools. The differences most consistent with SADD's goals and messages were that SADD school students disagreed more that high school drinking was okay and agreed more that non-alcoholic parties can be fun. The next question was whether there were behavioral differences between SADD and comparison schools.

### Student Drinking and Drinking and Driving: Self-Reports

The next tables address self-reports of student alcohol use and any incidents of drinking and driving or riding with another teen who had been drinking before driving. First, these are measures of background alcohol availability and use. Second, they are measures of the effectiveness of SADD (in the context of all other similar messages and efforts) to reduce the incidence of teen drinking and driving. The SADD chapters in the study believed that such use was wrong for teens, but they recognized that it occurred and did not make abstinence a primary target. The chapters were consistent and firm in opposition to drinking and driving, however, and worked to increase awareness and sensitize attitudes against it and to provide acceptable alternatives and countermeasures.

These results generally favor the SADD schools over the comparison schools, though the differences were small and not often statistically significant.

From slightly over half as freshmen, the numbers of students who had drunk alcohol (outside of their immediate family) rose to nearly three-fourths for seniors (Table 3-19). There were minor differences between states (more Wisconsin teens reported drinking) and between sexes (more boys drank than did girls). Across all three states, the percentage of SADD and comparison students who had drunk alcohol was nearly identical. For Ohio and

Wisconsin, however, values were 61 percent for SADD schools and 64 percent for comparison schools. The difference was statistically significant overall ( $p < .001$ ) and for 1994 ( $p < .01$ ) but not for 1995.

The next four items (Tables 3-20 through 3-23) covered frequencies of drinking, using false I.D. to obtain alcohol, drinking and driving, and riding with a driver who had been drinking. In all cases, there was no significant overall difference between schools with SADD programs and the comparison schools. All the behaviors did increase from ninth grade to twelfth, and boys more often than girls drank frequently, used false I.D., and drove after drinking.

Table 3-19. Percent Students Who Have Drunk Alcohol Outside the Presence of Their Immediate Family

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	53.6	59.7	59.8	70.6	59.1	60.8	60.2
Ohio	49.8	56.5	61.4	74.2	61.1	57.1	59.2
Wisconsin	53.7	63.0	70.5	77.8	67.0	63.8	65.3
SADD	52.6	59.1	63.2	73.1	61.7	59.9	60.8
None	51.6	61.0	66.6	76.9	64.7	61.6	63.2
<b>TOTAL</b>	<b>52.2</b>	<b>59.8</b>	<b>64.8</b>	<b>74.8</b>	<b>63.0</b>	<b>60.6</b>	<b>61.8</b>

Table 3-20. Mean Frequency of Drinking Alcohol in Last Year  
(1=None, 2=1-5 times, 3=6-12 times, 4=2-4 times/month, 5=2-3 times/week, 6=4+ times/week)

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	2.08	2.25	2.22	2.54	2.37	2.12	2.25
Ohio	2.04	2.18	2.28	2.69	2.44	2.08	2.27
Wisconsin	2.08	2.31	2.52	2.66	2.51	2.24	2.37
SADD	2.10	2.25	2.33	2.60	2.44	2.14	2.30
None	2.01	2.24	2.41	2.69	2.46	2.16	2.32
<b>TOTAL</b>	<b>2.06</b>	<b>2.25</b>	<b>2.37</b>	<b>2.64</b>	<b>2.45</b>	<b>2.15</b>	<b>2.31</b>

Table 3-21 summarizes responses to the question, "Have you ever used false I.D. to obtain alcoholic beverages?" Overall, 6 percent of all high school students — 10 percent of seniors — said that they had used false I.D. There was considerable variation between states, with the urban schools of Arizona showing the highest rates and the suburban/small city schools of Wisconsin showing the lowest. Boys used false I.D. about twice as often as girls.

Students in SADD schools used false I.D. slightly less than students in the comparison schools. For boys, the rates were nearly the same; the difference was due to girls in the SADD schools using false I.D. less than girls in the comparison schools. The SADD vs. comparison school difference for females approached statistical significance ( $p \approx .05$ ).

Table 3-21. Percent Using False I.D. to Obtain Alcohol

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	4.5	6.4	6.6	11.8	9.8	4.2	7.0
Ohio	4.4	4.6	5.9	13.1	9.2	3.7	6.6
Wisconsin	2.8	3.8	4.5	7.0	5.9	2.8	4.4
SADD	3.9	4.6	5.2	9.5	7.9	3.1	5.6
None	3.5	5.0	5.8	11.2	8.1	3.9	6.2
<b>TOTAL</b>	<b>3.8</b>	<b>4.8</b>	<b>5.5</b>	<b>10.3</b>	<b>8.0</b>	<b>3.5</b>	<b>5.8</b>

By the time they were seniors, more than one-third of all students reported driving after drinking alcohol (Table 3-22). Boys did so much more than girls did (over all grades, 29 percent vs. 21 percent). Rates of drinking and driving were somewhat lower for SADD schools vs. comparison schools (24.5 percent and 27.1 percent) but the difference was not statistically significant.

Table 3-23 reports the numbers of students who said they had ridden with teen drivers who had been drinking. Forty-five percent of seniors reported having done this one or more times. As many boys as girls had ridden with drinking drivers, and there were no significant differences between SADD schools and comparison schools.

Thus, by these two measures, there was no evidence that students in the SADD schools responded to the messages of their SADD chapters by reducing their own drinking and driving or by not riding with teen drivers who had been drinking.

Table 3-22. Percent Ever (One + Times) Drive After Drinking

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	12.1	15.3	24.0	29.9	24.8	15.4	20.5
Ohio	15.8	16.3	27.7	39.3	30.1	20.6	26.6
Wisconsin	12.0	15.4	34.1	40.1	29.8	25.6	27.8
SADD	13.2	15.8	29.5	35.9	28.6	19.8	24.5
None	13.6	15.5	30.0	39.6	29.8	23.3	27.1
<b>TOTAL</b>	<b>13.3</b>	<b>15.7</b>	<b>29.7</b>	<b>37.6</b>	<b>29.1</b>	<b>21.3</b>	<b>25.6</b>

Table 3-23. Percent Students Who Rode (One + Times) with Teen Driver Who Had Been Drinking

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	31.6	35.6	38.6	41.8	35.0	37.4	36.3
Ohio	26.0	32.1	36.1	45.7	35.1	32.5	33.9
Wisconsin	27.6	32.8	40.3	45.6	35.0	36.6	35.9
SADD	28.8	33.4	38.2	43.9	34.9	35.3	35.1
None	26.6	33.0	38.6	45.9	35.2	35.3	35.5
<b>TOTAL</b>	<b>27.9</b>	<b>33.3</b>	<b>38.4</b>	<b>44.8</b>	<b>35.0</b>	<b>35.3</b>	<b>35.3</b>

### Student Tickets and Crashes: Self Reports

This final section devoted to in-school survey results looks at student-reported moving-violation traffic citations and crashes, total and alcohol-related. This represents the most direct measure of safety impacts of an in-school program such as SADD.

By the time they were seniors, more than one-third of all students had received moving-violation tickets (up from only 2 percent for freshmen) (Table 3-24). Likelihood of receiving tickets was strongly related to length of time licensed. Overall, boys were twice as likely as girls to have received tickets, a difference at least partially due to the facts that boys have had

their licenses about a month longer and they reported driving over 50 percent more miles per week. Rates were lower for SADD schools (12 percent vs. 17 percent overall) (the difference was statistically significant,  $p < .001$ ).

For alcohol-related tickets only (Table 3-25), less than 2 percent of seniors had received them. Boys were much more likely to have received alcohol-related tickets than girls (overall, 1.3 percent vs. 0.3 percent). Rates for SADD schools were nearly identical to those for comparison schools. These data are based on a very small number of such tickets, however.

Table 3-24. Percent Students with (One or More) Moving-Violation Tickets

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	2.2	5.7	12.4	27.5	14.6	6.4	10.4
Ohio	1.4	5.1	19.0	37.6	18.7	8.7	13.7
Wisconsin	1.8	6.7	25.0	38.3	21.1	11.6	16.3
SADD	1.7	5.2	16.6	31.4	15.8	7.8	11.8
None	1.8	6.8	23.7	40.5	22.3	11.3	16.8
<b>TOTAL</b>	<b>1.8</b>	<b>5.9</b>	<b>19.9</b>	<b>35.5</b>	<b>18.7</b>	<b>9.3</b>	<b>14.0</b>

Table 3-25. Percent Students with (One or More) Alcohol-Related Tickets

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	0.25	0.83	0.86	1.62	1.42	0.29	0.82
Ohio	0.15	0.92	0.85	1.56	1.27	0.32	0.83
Wisconsin	0.50	0.55	1.33	1.19	1.34	0.38	0.85
SADD	0.20	0.85	1.04	1.37	1.28	0.32	0.81
None	0.47	0.62	1.07	1.49	1.40	0.35	0.88
<b>TOTAL</b>	<b>0.31</b>	<b>0.75</b>	<b>1.05</b>	<b>1.42</b>	<b>1.33</b>	<b>0.34</b>	<b>0.83</b>

Tables 3-26 and 3-27 provide similar data for self-reported crash involvement, overall and after drinking alcohol. As for tickets, over one-third of seniors had been in crashes as drivers.

Boys were more frequently in crashes than girls, but the difference was smaller than for tickets, 19 percent vs. 14 percent. SADD-school students were less likely to have been in a crash while driving as students in comparison schools (18 percent vs. 14 percent), but the difference was not statistically significant.

Two percent of seniors had been in crashes after drinking alcohol. Boys were in more than three times as many alcohol-related driving crashes as girls. There was no difference in self-reported alcohol-related driving crash rates between SADD and comparison schools. As was the case for alcohol-related tickets, however, these data are based on very few events.

Table 3-26. Percent Students Who Were Drivers in (One or More) Crashes

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	4.8	7.5	17.9	28.3	14.5	11.5	13.2
Ohio	4.5	8.4	26.5	39.2	21.2	13.7	17.5
Wisconsin	3.5	9.1	24.6	35.5	18.6	15.0	16.7
SADD	3.8	7.3	21.6	33.1	16.4	12.4	14.4
None	4.8	10.0	26.0	37.8	21.4	15.3	18.4
<b>TOTAL</b>	<b>4.2</b>	<b>8.4</b>	<b>23.7</b>	<b>35.2</b>	<b>18.6</b>	<b>13.7</b>	<b>16.2</b>

Table 3-27. Percent Students with (One or More) Crashes While Driving After Drinking

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	0.7	0.8	1.3	2.1	1.8	0.5	1.1
Ohio	0.4	0.9	1.6	2.0	1.7	0.5	1.1
Wisconsin	0.9	0.9	1.2	1.5	1.6	0.6	1.1
SADD	0.5	1.0	1.4	1.9	1.6	0.6	1.1
None	0.9	0.8	1.3	1.7	1.8	0.5	1.2
<b>TOTAL</b>	<b>0.6</b>	<b>0.9</b>	<b>1.4</b>	<b>1.8</b>	<b>1.7</b>	<b>0.5</b>	<b>1.1</b>

## Crash Data

If SADD chapters are effective in promoting traffic safety, it should be reflected in reduced traffic crashes and injuries or deaths. These effects may, in turn, be large enough to be measured. Accordingly, crash data were obtained for the areas of the twelve high schools for up to several years prior to the time of this study. The data were examined to see if crash reductions could be seen for young drivers in three areas: Overall crashes; single-vehicle crashes; and night-time crashes. (The latter two subsets more often involve alcohol, even if it is not mentioned, and they are frequently used in research as surrogate measures for alcohol-involved crashes.) These analyses were conducted for all crash-involved drivers and repeated separately for males and females.

In general, the crash data were analyzed by looking at drivers rather than at the crashes themselves. For the purposes of these analyses, crash-involved drivers younger than 16 or older than 64 were eliminated. The remaining drivers were divided into four age categories. First were 16- and 17-year-olds. Drivers at that age are typically still in high school and most exposed to safe driving messages from SADD. Next were 18- to 20-year-olds. Some may still be in high school, but most have recently graduated; they will have been exposed to SADD messages in school very recently. These two age groups would be expected to show the largest effect of crash reductions due to active SADD programs in the high schools. The third group was 25-64 year olds, that is, adult drivers. They were treated as a comparison age group: One unlikely to be influenced by SADD messages but, in each geographic area, the best indicators of overall crash frequency or likelihood. Last were 21-24 year olds. They were separated out because they were less likely to be affected by SADD messages, but not so old that they might not be affected, and because drivers of that age still show considerably higher crash rates than older adults. All analyses except the initial overall analysis omitted the 21-24 year olds.

All analyses were based only on crashes resulting in injury or fatal injury. Across all jurisdictions, approximately half of all the crashes were property damage only. The criteria for reporting property damage crashes can vary from jurisdiction to jurisdiction (and time to time); because of that, and because property-damage crashes are less often alcohol related, they were excluded.

The analyses for the areas of the study are, to some extent, unique. Each is presented separately below. Finally, because the four Ohio and Wisconsin crash analyses fit into the same general structure, they are combined into an overall summary.

### Ohio

Crash data were obtained for the three counties in which the high schools were located. Data were provided for 1991 through 1994. Crash records provided information on up to three drivers for each crash. Records for all drivers of motor vehicles in injury or fatal crashes were prepared for analysis.

**Worthington-Dublin.** Worthington and the comparison community of Dublin are located in Franklin County, as is the major city of Columbus. Records of drivers in crashes occurring in Worthington, in Dublin, and in the rest of Franklin County excluding Columbus were retained for analysis.<sup>5</sup> Table 3-28 shows the basic tabulation for the 22,851 drivers aged 16-64 who were in crashes in those three areas in 1991-94. A  $\chi^2$  test of independence shows marginal statistical significance ( $\chi^2 = 12.47$ , 6 d.f.;  $p \geq .05$ ). However, the statistical significance was due to lower crash rates for 18-20 year olds in Worthington and in Dublin than in the remainder of Franklin County.

Table 3-28. Crash Involvement Summary, Franklin County (excluding Columbus), Ohio, 1991 - 1994.<sup>6</sup>

Age Categories	Location			Total
	Worthington (SADD)	Dublin (Comparison)	County Residual	
16 - 17 years	86 7.7%	119 8.3%	1,521 7.5%	1,726 7.6%
18 - 20 years	102 9.1%	122 8.5%	2,156 10.6%	2,380 10.4%
21 - 24 years	151 13.5%	167 11.6%	2,608 12.9%	2,926 12.8%
25 - 64 years	781 69.7%	1,032 71.7%	14,006 69.0%	15,819 69.2%
<b>Total</b>	<b>1,120</b>	<b>1,440</b>	<b>20,291</b>	<b>22,851</b>

Further analyses on subsets of these data were performed and are summarized in Table 3-29. As indicated above, the purpose of these additional analyses was to see whether there might be specific subsets of crash types, conditions, or involved drivers for which the impact of SADD programs was (more strongly) effective. As such, the analyses may be characterized as primarily descriptive and exploratory.

<sup>5</sup> It is not clear what should be "expected" of the residual areas, in Franklin County or in the other areas. SADD chapters, or other peer-to-peer anti-drinking and driving organizations, exist in many of the other high schools around those included in this study. It is likely that, on average, high schools in all the residual areas have a level of peer-to-peer activity intermediate between those of the selected SADD schools and their selected comparison schools. Thus, if there are crash-reduction effects, they should be most strongly shown in the SADD areas and the residual areas could show crash involvement patterns anywhere between those in the SADD schools (full reduction) and those in the comparison schools (no visible reduction).

<sup>6</sup> Cell contents are Number of drivers and Percent of column total.

Eighteen subanalyses are shown. The first compared crash rates for 16-17 year olds with those of 25-64 year olds across the three areas (in the table, "SADD" is Worthington; "Comparison" is Dublin; and "Residual" is the remainder of Franklin County excluding Columbus). Additional analyses were performed for male drivers in all crashes, female drivers in all crashes, all drivers in single-vehicle crashes, ..., through female drivers in nighttime crashes (occurring between 9 pm and 5:59 am). The analyses in the top half of the table compared 16-17 year old drivers with 25-64 year old drivers; the analyses in the lower half compared 18-20 year old drivers with 25-64 year old drivers.

Primary data shown in the table are crash involvement ratios, which compare the number of crash-involved drivers in the target age group (either 16-17 or 18-20) to the number in the 25-64 year-old group. The ratios are adjusted for the number of years of age included in the groups. For example, 2.20 in the top left indicates that 16-17 year olds in Worthington (the SADD community) were involved in 2.20 times as many crashes per year of age as were adults ages 25-64 in the same community. Values above 1.00 indicate higher crash involvement for young drivers vs. the adult drivers; values below 1.00 indicate lower crash involvement for the young drivers.

Table 3-29. Franklin County, Ohio, Fatal/Injury Crash Involvement:  
Worthington vs. Dublin vs. County Residual (Excluding City of Columbus)

		Ratio vs. Drivers Ages 25-64			Total N	Chi-sq (d.f.)	
		SADD	Comparison	Residual			
<b>16-17 Year Old Drivers</b>							
<b>All Crashes</b>	<b>All</b>	2.20	2.31	2.17	17,545	0.36	(2)
	<b>Male</b>	2.54	2.46	2.33	9,650	0.46	(2)
	<b>Female</b>	1.83	2.10	1.96	7,765	0.37	(2)
<b>1-Vehicle</b>	<b>All</b>	6.88	3.89	4.70	1,417	1.62	(2)
	<b>Male</b>	7.37	4.68	4.54	927	1.17	(2)
	<b>Female</b>	6.15	2.73	4.83	474	1.06	(2)
<b>Night</b>	<b>All</b>	3.39	3.16	2.93	1,951	0.21	(2)
	<b>Male</b>	4.32	3.68	2.83	1,283	1.47	(2)
	<b>Female</b>	1.82	2.11	3.07	646	0.74	(2)
<b>18-20 Year Old Drivers</b>							
<b>All Crashes</b>	<b>All</b>	1.74	1.58	2.05	18,199	9.16	(2)
	<b>Male</b>	1.86	1.54	2.22	10,036	8.39	(2)
	<b>Female</b>	1.61	1.59	1.84	8,034	1.64	(2)
<b>1-Vehicle</b>	<b>All</b>	1.67	1.67	4.21	1,489	10.09	(2)
	<b>Male</b>	1.40	1.13	4.33	982	9.78	(2)
	<b>Female</b>	2.05	3.03	3.95	493	0.99	(2)
<b>Night</b>	<b>All</b>	2.49	2.11	3.30	2,112	2.23	(2)
	<b>Male</b>	2.52	1.05	3.27	1,386	4.23	(2)
	<b>Female</b>	2.42	4.21	3.30	701	0.60	(2)

"Total N" gives the total number of crash-involved drivers in the crash subset summarized on that line of the table. "Chi-sq (d.f.)" shows the calculated  $\chi^2$  test of independence value for the 2 x 3 table (two age groups by three community areas) summarized on the line. Levels of statistical significance are not shown because the tests are highly interdependent. As a guide,  $\chi^2$  (2 d.f.) values corresponding to  $p \leq .01$  are 9.21 for a single comparison, 14.96 for Bonferroni-corrected level for one of 18 comparisons; corresponding values for  $p \leq .05$  are 5.99 and 11.77, respectively.

The only comparisons nearing significance were for 18-20-year-olds, overall and males, all crashes and single-vehicle crashes. In all cases the values were due to higher crash involvement rates for residual areas than for either Worthington or Dublin, an effect unrelated to the presence of the SADD programs in Worthington.

**Philo-Fairfield Union.** Philo High School draws students from Muskingum County, and Fairfield Union draws students from Fairfield County. The counties are largely rural (Fairfield County includes some smaller, less dense suburbs of Columbus) except for the small cities of Zanesville and Lancaster. For the purposes of these analyses, the counties were divided into four areas: Philo area (including Philo, Roseville, South Zanesville, Blue Rock Township, Brush Creek Township, Clay Township, Harrison Township, Salt Creek Township, and Wayne Township), Fairfield Union area (including Bremen, Pleasantville, Rushville, West Rushville, Pleasant Township, Richland Township, and Rush Creek Township), Zanesville and Lancaster, and residual areas. Zanesville and Lancaster crashes were dropped from these analyses.

Table 3-30. Crash Involvement Summary, Fairfield and Muskingum Counties (excluding Lancaster and Zanesville), Ohio, 1991 - 1994.

Age Categories	Location			Total
	Philo (SADD)	Fairfield Union (Comparison)	2-County Residual	
16 - 17 years	62 10.0%	76 13.3%	710 12.3%	848 12.2%
18 - 20 years	86 13.9%	90 15.8%	824 14.3%	1,000 14.4%
21 - 24 years	85 13.7%	68 11.9%	748 12.9%	901 12.9%
25 - 64 years	386 62.4%	337 59.0%	3,496 60.5%	4,219 60.5%
<b>Total</b>	<b>619</b>	<b>571</b>	<b>5,778</b>	<b>6,968</b>

Table 3-30 shows the overall frequency of crash involvements for crashes occurring in the Philo, Fairfield Union, and 2-county residual areas. The overall test of independence was not significant ( $\chi^2 = 5.28$ , 2 d.f.;  $p > .05$ ). Overall, the distributions of crash involvements by age category across the three areas were quite similar.

Further analyses on subsets of data were also conducted and are shown in Table 3-31. The purpose of the further analyses was to determine whether specific subsets of crashes showed differences across age groups across the three areas. None of the tests of independence approach statistical significance, showing that there were no significant patterns of differences in age-group crash involvement for these three areas.

Table 3-31. Muskingum and Fairfield Counties, Ohio, Fatal/Injury Crash Involvement: Philo High School area vs. Fairfield Union High School area vs. 2-County Residual (Excluding Cities of Zanesville and Lancaster)

		Ratio vs. Drivers Ages 25-64			Total N	Chi-sq (d.f.)	
		SADD	Comparison	Residual			
<b>16-17 Year Old Drivers</b>							
<b>All Crashes</b>	<b>All</b>	3.21	4.51	4.06	5,067	3.58	(2)
	<b>Male</b>	3.32	4.15	4.20	3,033	1.68	(2)
	<b>Female</b>	2.93	5.12	3.88	2,022	3.56	(2)
<b>1-Vehicle</b>	<b>All</b>	4.70	5.77	6.15	1,552	1.49	(2)
	<b>Male</b>	3.66	5.90	5.94	971	2.79	(2)
	<b>Female</b>	6.67	5.58	6.63	573	0.26	(2)
<b>Night</b>	<b>All</b>	2.50	6.07	4.88	948	4.68	(2)
	<b>Male</b>	3.33	4.88	4.18	671	0.63	(2)
	<b>Female</b>	0.00	9.33	6.82	274	7.29	(2)
<b>18-20 Year Old Drivers</b>							
<b>All Crashes</b>	<b>All</b>	2.97	3.56	3.14	5,219	1.30	(2)
	<b>Male</b>	3.26	3.58	3.39	3,155	0.21	(2)
	<b>Female</b>	2.46	3.52	2.76	2,047	1.83	(2)
<b>1-Vehicle</b>	<b>All</b>	3.83	5.64	4.40	1,594	2.37	(2)
	<b>Male</b>	4.55	6.12	4.92	1,038	1.01	(2)
	<b>Female</b>	1.62	4.96	3.60	548	3.63	(2)
<b>Night</b>	<b>All</b>	5.33	4.52	5.01	1,055	0.24	(2)
	<b>Male</b>	5.11	4.88	4.98	764	0.02	(2)
	<b>Female</b>	5.33	3.56	5.16	287	0.43	(2)

## Wisconsin

The four high schools were located in four counties. Crash data were obtained for 1991 through 1994. Crash records provided information on up to two drivers in each crash, and data were analyzed for all involved drivers. All crash types were retained in the analyses except those showing a collision between a motor vehicle and a bicyclist. The data records did not provide vehicle type (bicycles were coded as vehicles) and it was not possible from positional or other information in the data to reliably identify which operator was the bicyclist. Because such crashes are rare and seldom involve alcohol, they were eliminated from the analyses. Property-damage-only crashes were also eliminated.

**Franklin and Oconomowoc.** Franklin is a near suburb of Milwaukee located in Milwaukee County. Oconomowoc is somewhat farther from Milwaukee and is located in Waukesha County. Records from crashes occurring in the two counties were coded according to whether the crashes occurred in Franklin, in Oconomowoc, in the city of Milwaukee, or in other areas. City of Milwaukee crashes were dropped from further analysis.

The overall analysis of these crash involvements is shown in Table 3-32. Chi-squared for the table is statistically significant ( $\chi^2 = 43.36$ , 6 d.f.;  $p < .001$ ). The effect is primarily due to large numbers of crash involvements for Oconomowoc 16-17 year olds.

Table 3-32. Crash Involvement Summary, Milwaukee and Waukesha Counties (excluding the City of Milwaukee), Wisconsin, 1991 - 1994.

Age Categories	Location			Total
	Franklin (SADD)	Oconomowoc (Comparison)	2-County Residual	
16 - 17 years	66 8.7%	101 13.7%	2,364 7.8%	2,531 7.9%
18 - 20 years	87 11.5%	91 12.3%	3,125 10.3%	3,303 10.4%
21 - 24 years	86 11.4%	67 9.1%	3,524 11.6%	3,677 11.5%
25 - 64 years	518 68.4%	480 65.0%	21,389 70.4%	22,387 70.2%
<b>Total</b>	<b>757</b>	<b>739</b>	<b>30,402</b>	<b>31,898</b>

Analyses of crash involvement subgroups for Franklin and Oconomowoc is shown in Table 3-33. Specific comparisons of 16-17 year olds vs. 25-64 year olds confirm the overall

analysis results shown above. For both males and females in Oconomowoc, their crash involvement rates are approximately 75% higher than those for Franklin or the county-residual areas. These differences tend to appear also for males in alcohol-implicated, single vehicle, and nighttime crashes, though they do not reach statistical significance.

Table 3-33. Milwaukee and Waukesha Counties, Wisconsin, Fatal/Injury Crash Involvement: Franklin vs. Oconomowoc vs. 2-County Residual (Excluding City of Milwaukee)

		Ratio vs. Drivers Ages 25-64			Total N	Chi-sq (d.f.)	
		SADD	Comparison	Residual			
<b>16-17 Year Old Drivers</b>							
<b>All Crashes</b>	<b>All</b>	2.55	4.21	2.21	24,918	35.18	(2)
	<b>Male</b>	2.24	4.32	2.19	14,035	20.44	(2)
	<b>Female</b>	3.06	4.09	2.23	10,883	16.22	(2)
<b>1-Vehicle</b>	<b>All</b>	4.44	6.90	4.41	2,395	2.88	(2)
	<b>Male</b>	4.00	9.66	4.42	1,532	5.88	(2)
	<b>Female</b>	5.26	4.14	4.40	863	0.14	(2)
<b>Night</b>	<b>All</b>	5.68	7.43	3.67	2,921	7.53	(2)
	<b>Male</b>	4.00	7.27	3.26	1,975	4.16	(2)
	<b>Female</b>	9.17	7.69	4.60	946	4.33	(2)
<b>18-20 Year Old Drivers</b>							
<b>All Crashes</b>	<b>All</b>	2.24	2.53	1.95	25,690	6.35	(2)
	<b>Male</b>	2.44	2.77	2.03	14,574	5.54	(2)
	<b>Female</b>	1.90	2.26	1.84	11,116	1.43	(2)
<b>1-Vehicle</b>	<b>All</b>	3.95	4.60	3.48	2,473	1.29	(2)
	<b>Male</b>	5.33	5.98	3.74	1,608	3.07	(2)
	<b>Female</b>	1.40	3.22	3.01	865	1.13	(2)
<b>Night</b>	<b>All</b>	3.96	4.19	3.61	3,125	0.31	(2)
	<b>Male</b>	3.73	3.64	3.49	2,137	0.06	(2)
	<b>Female</b>	4.44	5.13	3.89	988	0.36	(2)

**Oshkosh and Menasha.** Oshkosh has two high schools. According to information received during site recruitment, both have had active SADD programs for the last several years. In the analysis, all of Oshkosh was considered to be a SADD area. Oshkosh is entirely within Winnebago County. Menasha, the comparison community, is mostly within Winnebago County, partly within Calumet County (which extends down the east side of Lake Winnebago). Crash data were obtained for both counties, and they were subdivided into Oshkosh, Menasha, and two-county residual areas. Most of the crashes in the residual areas occurred in

Winnebago County, which has a population much larger than does Calumet County. As with the other sites, analyses were performed on drivers involved in injury or fatal-injury crashes.

Table 3-34 shows the overall analysis. There was a statistically significant interaction between area and age group ( $\chi^2 = 45.96$ , d.f. = 2,  $p < .001$ ). Both Oshkosh and Menasha showed lower crash involvement for 16-17 year olds. This was also the case for Menasha 18-20 year olds; however, Oshkosh 18-20 year olds and 21-24 year olds showed crash involvements much higher than in the other areas.

Table 3-34. Crash Involvement Summary, Calumet and Winnebago Counties, Wisconsin, 1991 - 1994.

Age Categories	Location			Total
	Oshkosh (SADD)	Menasha (Comparison)	2-County Residual	
16 - 17 years	224 7.1%	82 6.4%	366 9.5%	672 8.1%
18 - 20 years	385 12.2%	126 9.9%	423 11.0%	934 11.3%
21 - 24 years	496 15.7%	181 14.2%	453 11.8%	1,130 13.7%
25 - 64 years	2,050 65.0%	884 69.4%	2,606 67.7%	5,540 66.9%
<b>Total</b>	<b>3,155</b>	<b>1,273</b>	<b>3,848</b>	<b>8,276</b>

Additional analyses on the Oshkosh-Menasha crash involvement data were performed. The overall test for 16-17 year olds showed comparably low involvement ratios for Oshkosh and Menasha, males and females, versus the residual areas. No specific subsets of 16-17 year olds showed noticeable contribution to this result, suggesting that the reduction was among crashes traditionally low in alcohol involvement, that is, daytime and multiple vehicle. Among 18-20 year olds, involvement ratios were relatively high for: Oshkosh males (overall, alcohol-indicated, and single-vehicle crashes) and residual-area females for nighttime crashes. Because the effects are relatively small and are idiosyncratic in terms of the study's design, these differences seem likely to be unrelated to the presence or absence of a peer-to-peer program.

Table 3-35. Calumet and Winnebago Counties, Wisconsin, Fatal/Injury Crash Involvement: Oshkosh vs. Menasha vs. 2-County Residual

		Ratio vs. Drivers Ages 25-64			Total N	Chi-sq (d.f.)	
		SADD	Comparison	Residual			
<b>16-17 Year Old Drivers</b>							
<b>All Crashes</b>	<b>All</b>	2.19	1.86	2.81	6,212	14.54	(2)
	<b>Male</b>	2.27	1.70	2.74	3,649	8.36	(2)
	<b>Female</b>	2.08	2.05	2.92	2,563	7.44	(2)
<b>1-Vehicle</b>	<b>All</b>	3.94	3.44	4.54	803	1.08	(2)
	<b>Male</b>	4.39	2.95	4.04	539	0.86	(2)
	<b>Female</b>	3.27	4.38	5.76	264	2.08	(2)
<b>Night</b>	<b>All</b>	2.94	2.34	3.12	826	0.79	(2)
	<b>Male</b>	2.64	1.67	2.80	600	1.32	(2)
	<b>Female</b>	3.73	3.59	4.18	226	0.13	(2)
<b>18-20 Year Old Drivers</b>							
<b>All Crashes</b>	<b>All</b>	2.50	1.90	2.16	6,474	7.42	(2)
	<b>Male</b>	2.71	1.94	2.05	3,807	9.90	(2)
	<b>Female</b>	2.25	1.85	2.36	2,667	2.19	(2)
<b>1-Vehicle</b>	<b>All</b>	6.13	2.72	4.17	879	8.82	(2)
	<b>Male</b>	6.99	2.84	4.26	604	8.03	(2)
	<b>Female</b>	4.85	2.50	3.95	275	1.69	(2)
<b>Night</b>	<b>All</b>	4.22	2.64	3.65	918	3.03	(2)
	<b>Male</b>	3.86	3.15	3.42	671	0.52	(2)
	<b>Female</b>	5.20	1.71	8.50	275	12.57	(2)

## Arizona

Crash data for the Arizona sites were provided by the municipalities of Tempe and Phoenix. The analyses that could be performed differed significantly from those in Ohio and Wisconsin. The crash data were only for the areas from which the test schools drew students rather than for the entire cities or county. This meant that there was no "residual" area to include in the analyses. Also, it was known from the focus groups that the Marcos de Niza SADD program had been active only since about 1991; thus differences due to the peer-to-peer program should only be anticipated for the period 1992 through 1994. As in Ohio and Wisconsin, analyses were performed on drivers involved in injury or fatal crashes.

**Marcos de Niza and McClintock areas in Tempe.** Data were provided for crashes occurring from July, 1989, through December, 1994. During that time period, McClintock High School consistently had no active peer-to-peer program (the program became active only at the very end of 1994). Marcos de Niza's program became active about half way through the period. The analyses performed used a 2 x 2 breakdown of site (Marcos de Niza vs. McClintock) and time (7/89 - 12/91 versus 1/92 - 12/94). If there were reductions in crash

involvements due to an active SADD program, then there should be fewer crashes for the Marcos de Niza area for 1992 - 1994 (for young drivers, as compared to the McClintock area) but there should be no difference earlier.

Table 3-36 contains the overall distribution of crash involvements for injury crashes in the areas of Tempe covered by Marcos de Niza and McClintock High Schools. Overall, the patterns of crashes by age group are significantly different by site and time period ( $\chi^2 = 201.06$ , d.f. = 9,  $p < .001$ ). Differences are complex. Crash involvements were low for: McClintock 1992-94 16-17 year olds; Marcos de Niza 1992-94 18-20 year olds; Marcos de Niza (all years) 21-24 year olds; and McClintock 1989-91 25-64 year olds. Crash involvements were high for Marcos de Niza (all years) 16-17 year olds; McClintock 1989-91 18-20 year olds; McClintock (all years) 21-24 year olds; and Marcos de Niza 1992-94 25-64 year olds.

Arizona State University, with its large number of 18-24 year olds, is in Tempe near the McClintock area, which may explain the high values for those ages in that area (in all but 1992-94 18-20 year olds). The high crash involvements for Marcos de Niza area 16-17 year olds, particularly during the years of the active SADD program, suggest that there may be significant differences between the areas over and above any differences that may be SADD-related. The data do not show any evidence of crash reductions associated with the active SADD program.

Table 3-36. Injury Crash Involvement Summary: Marcos de Niza and McClintock areas of Tempe, Arizona, July 1989 - December 1994.

Age Categories	Location/Time Period				Total
	Marcos de Niza		McClintock		
	Pre-SADD	SADD	Comparison		
	7/89 - 1991	1992 - 94	7/89 - 1991	1992 - 94	
16 - 17 years	108 8.2%	152 7.6%	150 4.8%	147 3.7%	557 5.4%
18 - 20 years	182 13.9%	224 11.2%	522 16.8%	503 12.8%	1,431 13.8%
21 - 24 years	171 13.0%	251 12.6%	642 20.7%	838 21.3%	1,902 18.4%
25 - 64 years	850 64.8%	1,366 68.5%	1,790 57.7%	2,440 62.1%	6,446 62.4%
<b>Total</b>	<b>1,311</b>	<b>1,993</b>	<b>3,104</b>	<b>3,928</b>	<b>10,336</b>

The additional analyses shown in Table 3-37 reflect the large number of statistically significant differences shown above. Patterns shown for 16-17 year olds in all crashes were generally reflected separately for males and females and for injury-fatal only crashes, overall and for males and females. That is, McClintock-area crash levels were lower than those in the Marcos de Niza area, in 1989-91 and even lower in 1992-1994. These effects were smaller and more irregular for 16-17 year old involvement in alcohol-implicated, single-vehicle, and nighttime crashes. Of those, only the effect for female drivers in nighttime crashes reached significance: Rates were lower for McClintock than for Marcos de Niza, lower for 1992-94 than 1989-1991.

More effects were statistically significant for 18-20 year olds. For all conditions except single-vehicle crashes (which had relatively few cases), crash involvement rates were higher in the McClintock area. Also holding true for most conditions, rates were lower for 1992-1994 than for 1989-1991.

Table 3-37. Tempe, Arizona, Fatal/Injury Crash Involvement:  
Marcos de Niza High School area vs. McClintock High School area,  
pre-SADD (1989-1991) vs. SADD (1992-1994) years

	Ratio vs. Drivers Ages 25-64				Total N	Chi-sq	(d.f.)
	Marcos de Niza 7/89 - 91 (preSADD)		McClintock 7/89 - 91 1992-94 Comparison				
<b>16-17 Year Old Drivers</b>							
All Crashes	All	2.54	2.23	1.68	1.20	7,003	41.58 (3)
	Male	2.69	2.07	1.53	1.07	4,135	33.39 (3)
	Female	2.36	2.42	1.93	1.41	2,847	11.13 (3)
1-Vehicle	All	5.63	4.55	2.22	1.95	183	4.59 (3)
	Male	6.09	4.21	2.55	2.96	137	2.35 (3)
	Female	4.44	6.67	1.25	0.00	46	4.09 (3)
Night	All	3.56	2.78	2.99	1.63	876	7.34 (3)
	Male	3.43	2.09	2.05	0.95	625	9.42 (3)
	Female	4.00	3.90	5.88	1.37	379	17.20 (3)
<b>18-20 Year Old Drivers</b>							
All Crashes	All	2.85	2.19	3.89	2.75	7,877	50.54 (3)
	Male	2.56	2.26	3.65	2.50	4,631	25.22 (3)
	Female	3.30	2.12	4.28	3.17	3,224	29.05 (3)
1-Vehicle	All	6.25	5.45	5.08	3.58	217	1.55 (3)
	Male	3.48	5.61	5.11	3.95	156	0.88 (3)
	Female	13.33	4.44	5.00	2.86	61	4.65 (3)
Night	All	4.15	3.58	5.84	4.99	1,071	5.34 (3)
	Male	2.67	4.38	4.75	4.43	760	3.29 (3)
	Female	9.33	2.28	9.02	6.86	505	10.88 (3)

**Cortez and Carl Hayden Areas in Phoenix.** Crash data for Phoenix were provided for the time period of mid-May, 1994, through March, 1995. Phoenix had just converted to a micro-computer data system for maintaining crash records, and they were able to provide data for only that time period. In City records, crash locations are coded according to a half-mile square grid system. Crashes occurring in the areas from which Cortez High School and Carl Hayden High Schools draw students were retained for analysis. These represented approximately five percent of all Phoenix crashes over that time period.

Table 3-38 shows tabulations for the drivers in injury-producing crashes in the two areas. There was a very slight tendency for Cortez-area crashes to involve more younger drivers, but an overall test did not reach statistical significance ( $\chi^2 = 3.13$ , d.f. = 2).

Table 3-38. Injury Crash Involvement Summary: Cortez High School and Carl Hayden High School areas of Phoenix, Arizona, May 1994 - March 1995.

Age Categories	Location		Total
	Cortez (SADD)	Carl Hayden (Comparison)	
16 - 17 years	42 6.1%	26 4.6%	68 5.4%
18 - 20 years	93 13.4%	65 11.4%	158 12.5%
21 - 24 years	107 15.5%	85 14.9%	192 15.2%
25 - 64 years	450 65.0%	393 69.1%	843 66.9%
<b>Total</b>	<b>692</b>	<b>569</b>	<b>1,261</b>

Table 3-39 provides the multiple tests for 16- and 17-year-olds and for 18- to 20-year olds shown for the other areas. Only one comparison approached statistical significance, that for 16-17-year-old females in which the rate for Carl Hayden was extremely low. Many of the tests in this table had very few total observations, making the ratios and the tests of significance extremely volatile.

Table 3-39. Phoenix, Arizona, Fatal/Injury Crash Involvement:  
Cortez High School area vs. Carl Hayden High School area

		Ratio vs. Drivers Ages 25-64		Total N	Chi-sq (d.f.)	
		SADD	Comparison			
<b>16-17 Year Old Drivers</b>						
All Crashes	All	1.87	1.32	911	1.78	(1)
	Male	1.73	1.76	561	0.00	(1)
	Female	2.04	0.46	350	6.64	(1)
1-Vehicle	All	4.00	3.64	19	0.01	(1)
	Male	0.00	5.00	15	1.15	(1)
	Female	n.a.	0.00	4	4.00	(1)
Night	All	3.24	0.85	92	2.81	(1)
	Male	4.00	1.14	67	2.25	(1)
	Female	1.67	0.00	25	0.96	(1)
<b>18-20 Year Old Drivers</b>						
All Crashes	All	2.76	2.21	1,001	1.61	(1)
	Male	2.99	2.19	616	2.03	(1)
	Female	2.45	2.24	385	0.09	(1)
1-Vehicle	All	2.67	6.06	22	0.47	(1)
	Male	2.67	8.33	19	0.90	(1)
	Female	n.a.	0.00	3	n.a.	(1)
Night	All	5.05	2.84	108	1.53	(1)
	Male	5.87	3.43	80	1.08	(1)
	Female	3.33	1.11	28	0.86	(1)

Note. "n.a." ratios can not be calculated because of a zero denominator

**Ohio and Wisconsin combined.** A final set of comparisons were produced for the four Ohio and Wisconsin site pairs. For all of them, consistent data were available for 1991 through 1994 for the SADD site, for the comparison site, and for the residual areas in their counties. Combined ratios (based on summing crash involvements across all areas) are shown in Table 3-40. Chi-square values are marginally significant for 16-17-year-olds, overall, and for 18-20-year-olds, overall and for males (that is, the values reach unadjusted levels of statistical significance but not the Bonferroni adjusted criteria). For 16-17-year-olds, eight of the nine comparisons show lower ratios for the combined SADD sites. This is in the direction of supporting effectiveness of the SADD chapters in reducing alcohol-related crashes. For the 18-20-year-olds, the comparisons reverse, however; eight of nine show lower ratios for the comparison sites.

Table 3-40. Four Site Pairs in Ohio and Wisconsin, Fatal/Injury Crash Involvement.

		Ratio vs. Drivers Ages 25-64			Total N	Chi-sq (d.f.)	
		SADD	Comparison	Residual			
<b>16-17 Year Old Drivers</b>							
<b>All Crashes</b>	<b>All</b>	2.35	2.77	2.39	53,742	6.89	(2)
	<b>Male</b>	2.44	2.76	2.45	30,367	2.40	(2)
	<b>Female</b>	2.22	2.76	2.31	23,233	4.93	(2)
<b>1-Vehicle</b>	<b>All</b>	4.56	4.89	4.89	6,167	0.29	(2)
	<b>Male</b>	4.31	5.25	4.74	3,969	0.78	(2)
	<b>Female</b>	4.83	4.44	5.15	2,174	0.52	(2)
<b>Night</b>	<b>All</b>	3.39	4.02	3.55	6,646	0.79	(2)
	<b>Male</b>	3.20	3.58	3.21	4,529	0.31	(2)
	<b>Female</b>	3.84	4.88	4.30	2,092	0.53	(2)
<b>18-20 Year Old Drivers</b>							
<b>All Crashes</b>	<b>All</b>	2.36	2.09	2.10	55,582	6.96	(2)
	<b>Male</b>	2.56	2.17	2.22	31,572	6.68	(2)
	<b>Female</b>	2.09	1.99	1.94	23,864	1.14	(2)
<b>1-Vehicle</b>	<b>All</b>	4.58	3.75	3.93	6,435	2.06	(2)
	<b>Male</b>	5.32	3.91	4.20	4,232	3.57	(2)
	<b>Female</b>	3.11	3.60	3.45	2,181	0.29	(2)
<b>Night</b>	<b>All</b>	4.15	3.14	3.69	7,210	2.66	(2)
	<b>Male</b>	3.92	3.16	3.61	4,958	1.06	(2)
	<b>Female</b>	4.59	3.10	4.11	2,251	1.68	(2)

## IV. DISCUSSION

The goals of this project fell in two areas: To describe the characteristics of exemplary high school peer-to-peer anti-drinking and driving organizations, and to assess their impact.

Six high schools with very active SADD chapters were recruited along with six comparison high schools — ones in similar, nearby communities but without a vigorous anti-drinking and driving student organization.

There are over 16,000 active SADD chapters across the nation along with other organizations such as Teen Institute and other local or regional groups. One of the difficulties in beginning the study, in fact, was finding possible comparison schools without active programs.

The best SADD programs, some of which we sampled, are respected and valued members of their school community. They have up to 10 percent of the student body as members (typically about three-quarters girls), and their members are campus leaders, solid students, and active in school and community organizations.

The typical active chapter, over the course of a school year, conducts a membership drive and one or two fund raisers, holds meetings once or twice a month, uses school and local media to publicize and educate, conducts several activities which bring the anti-drinking and driving message to the students and others in the community, and holds one or two major "blitzes," typically around homecoming and prom/graduation. Most are organized with several officers, but the most active ones delegate responsibility and activities throughout their membership. Officers and members may attend one or two "retreats" or conferences each year, and chapters may also organize purely social activities.

Although SADD's central theme is anti-drinking and driving (especially for teens), the national organization and the chapters we studied have a broader charter. They emphasize "positive decisions" and personal responsibility and growth which, in practice, goes much farther than just drinking and driving, and they work within their communities for other worthwhile activities and goals. Each individual chapter has its own emphasis and character.

SADD chapters usually work with very limited budgets. With occasional fund raisers such as candy sales and with contributions from local individuals and businesses in support of specific activities, the chapters operate with no more than \$1,000 - \$2,000 per year. Funds are spent for materials for activities, to support attendance at outside conferences, or to bring in outside speakers for school assemblies; most of the chapters also spent funds to support charitable activities.

SADD chapters may get materials from the national SADD headquarters, but most support comes from the state SADD organization, possibly in cooperation with and supported by the State Office of Highway Safety. That support can include materials, newsletters,

consultation and visits, leadership and all-member conferences, and connections to other resources, and it is one important factor in how active and effective a chapter can be.

An even more critical factor, at least in the chapters we observed, was a dynamic and committed leader for the chapter. Often this was the faculty advisor, and this arrangement is best for ensuring year-to-year continuity, but student leaders can also make the difference for a dynamic chapter.

The study also sought to assess the impact of the SADD chapters on students in the high schools, specifically in the area of teen drinking and drinking and driving. The evaluation showed that up to 95 percent of the students in an active SADD school were able to recall "SADD" when asked for the name of an anti-drinking and driving organization in their school, and students in the schools with active SADD chapters recalled about twice as many anti-drinking and driving activities as students in the comparison schools. At that level, then, the SADD chapters are very effective in raising awareness throughout the student body.

The evaluation also showed attitude differences between students in the SADD schools and in the comparison schools. The SADD-school students were less likely to believe that teen drinking (without driving) was okay, and they believed more strongly that parties without alcohol could be "just as much fun."

However, these attitude differences were relatively small, and there were a number of other attitude items (for example, Driving after a couple of beers isn't really dangerous) which could have shown differences but did not. Data covering self-reported behavior generally favored the SADD schools but the differences were small and generally not statistically significant.

Closer to the "bottom line" on alcohol-related traffic safety, student-reported involvement with traffic citations, alcohol-related traffic citations, crashes, and alcohol-related crashes showed no consistent difference between SADD schools and the comparison schools. Also, while analyses of police-report injury crash statistics provided some support for reduced crashes in SADD areas, the data were inconsistent.

Too much can be made of these crash and citation findings, however. The SADD chapters were active in their schools and brought the topics of teen drinking, drinking and driving, and crash consequences to the attention of their peers and, in many cases, to adults and students in other schools in their communities. Thus, the SADD chapters did make a noticeable contribution to traffic safety efforts in their communities. Translating that activity into measurable attitude change or measurable behavior change is a very difficult challenge, however, as numerous other efforts and studies have demonstrated.

As was noted in the Introduction, this study was not intended as an overall evaluation of the effectiveness of SADD or similar peer-to-peer organizations. It was, rather, an assessment of the traffic safety impacts of peer-to-peer organizations who had traffic safety as just one of their goals and objectives. Particularly through the focus groups, it was clear that these

programs had a wide range of personal and community goals, and also that these programs were successfully meeting those goals.

The study provided a very broad list of activities, themes, and approaches that the SADD chapters had tried to address drinking and driving and safety. This was a tribute to their resourcefulness and ingenuity. It also points to an area where SADD chapters can be helped to be more effective in reducing drinking and driving. Many of their efforts are aimed along three themes: Raising awareness that drinking and driving is a negative choice, graphically letting teens experience the possible serious consequences, and providing alternative activities and mechanisms for avoiding or dealing with drinking and driving situations. If more proven materials and ideas supporting these themes were readily available — to all school organizations with similar objectives — they might be able to direct their efforts more accurately and efficiently.

In conclusion, this project investigated active high school peer-to-peer organizations against teen drinking and drinking and driving. Organization members benefitted from their participation. The presence of these peer-to-peer organizations in a school was associated with: measurably greater anti-drinking and drinking driving activity within the school; and a student body that was more likely to hold attitudes reflecting positive reasons as to why not to drink and drive. Data covering actual drinking and driving and youth alcohol-related crashes tended to favor the SADD schools but were, most often, not statistically significant. It was concluded that high school peer-to-peer programs such as SADD can be an important component of an overall community strategy for dealing with underage drinking, drugs, and drinking and driving.

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## **Appendix A. Student Background Characteristics**

## Student (Respondent) Characteristics

One concern in comparing results between schools is that the students may differ from school to school in characteristics that are important to the main measures in the study. This Appendix looks at average student age and at driving experience including licensing and current driving.

Table A-1 summarizes the ages of students when they completed the surveys (based on month and year of birth). Students in successive grades were nearly one full year older than students in the grade before. (The fact that the difference was less than a full year may be due to students dropping out of school, and older students being more likely to drop out than younger ones.) On average, girls were about six weeks younger than their male counterparts. Students in SADD schools were about one week younger than students in comparison schools, statistically significant ( $p < .01$ ) but not important.

Table A-1. Average Student Age when Completing Survey

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
<b>Arizona</b>	15.26	16.21	17.19	18.19	16.60	16.49	<b>16.54</b>
<b>Ohio</b>	15.23	16.23	17.17	18.15	16.62	16.43	<b>16.52</b>
<b>Wisconsin</b>	15.24	16.22	17.21	18.17	16.64	16.54	<b>16.58</b>
<b>SADD</b>	15.25	16.22	17.17	18.15	16.57	16.45	<b>16.51</b>
<b>None</b>	15.23	16.22	17.22	18.18	16.69	16.53	<b>16.61</b>
<b>TOTAL</b>	<b>15.24</b>	<b>16.22</b>	<b>17.19</b>	<b>18.17</b>	<b>16.62</b>	<b>16.48</b>	<b>16.55</b>

A potentially important factor in students' attitudes about drinking, driving, and drinking and driving, and in their citation and crash experience, is how much total driving experience they have had and how much driving they normally did.

The percentage of students who had driven a motor vehicle on the road rose smoothly by grade, from 46 percent for freshmen to 96 percent for seniors (Table A-2). Driving was also significantly related to student age even when grade was taken into account. The patterns varied somewhat by state, with Arizona students having driven by ninth grade and somewhat fewer having driven by twelfth grade than either Ohio or Wisconsin students. Fewer females had driven on the road than males (71 percent vs. 79 percent); this was statistically significant even taking age into account. SADD schools and their comparison schools showed very similar

driving patterns and overall percentages. (All differences statistically significant,  $p < .001$ , except SADD vs. comparison,  $p > .05$ .)

Table A-2. Percent Students Who Have Driven a Motor Vehicle on a Street or Road

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	57.3	79.0	86.4	93.8	82.2	72.8	77.3
Ohio	43.6	70.9	93.6	97.3	78.2	67.4	72.8
Wisconsin	42.4	78.0	95.5	97.2	78.4	73.7	76.0
SADD	47.3	76.4	91.3	95.6	78.1	71.2	74.6
None	43.3	74.8	94.3	97.4	80.5	71.3	75.9
<b>TOTAL</b>	<b>46.3</b>	<b>75.7</b>	<b>92.8</b>	<b>96.3</b>	<b>79.2</b>	<b>71.2</b>	<b>75.1</b>

Students were also asked about their current driving — whether they drove for specific purposes and, per week, how many times and how many miles they drove. These responses are summarized in Tables A-3, A-4, and A-5. On average, freshmen drove for fewer purposes and fewer times and miles than sophomores, who drove less (on all measures) than juniors, who drove less than seniors. There were consistent differences between the states: Arizona students lagged behind their counterparts in Ohio and Wisconsin in numbers of purposes, frequency of driving, and distance driven. Wisconsin and Ohio students drove for about the same number of purposes and miles, but Wisconsin students drove more often. Males drove for more purposes, more often, for more miles than did females.

SADD and comparison schools showed very similar values in all three tables, although juniors and seniors in SADD schools drove less often and for fewer miles than their non-SADD counterparts. This varied between matched pairs of schools. In three pairs, SADD schools showed fewer miles driving; in two pairs, SADD schools had more driving; and in the other pair both schools had nearly equal mileages.

These patterns were reflected in the tests of statistical significance. In tests which included student age as a factor, all tests except SADD vs. comparison schools were statistically significant ( $p < .001$ ). The SADD vs. comparison schools effect was not statistically significant for kinds of driving but was significant in some but not all analyses based on number of times driving or miles driven per week.

Table A-3. Average Number of Kinds (Purposes) of Driving Cited

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	1.09	2.18	2.98	3.89	2.61	2.17	2.38
Ohio	0.69	1.94	4.03	4.69	2.83	2.32	2.58
Wisconsin	0.66	2.41	4.27	4.63	2.90	2.76	2.82
SADD	0.80	2.21	3.70	4.34	2.69	2.36	2.52
None	0.73	2.15	4.09	4.65	2.95	2.59	2.77
<b>TOTAL</b>	<b>0.77</b>	<b>2.19</b>	<b>3.88</b>	<b>4.48</b>	<b>2.81</b>	<b>2.46</b>	<b>2.63</b>

Table A-4. Average Number of Times Driving per Week, All Students

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	1.9	6.3	10.9	16.8	9.0	6.9	7.9
Ohio	1.6	5.8	14.4	18.9	10.4	6.7	8.6
Wisconsin	1.3	7.1	15.7	19.7	10.7	8.9	9.8
SADD	1.6	6.3	13.2	17.8	9.4	7.2	8.3
None	1.4	6.6	15.1	19.8	11.1	8.2	9.7
<b>TOTAL</b>	<b>1.5</b>	<b>6.4</b>	<b>14.1</b>	<b>18.7</b>	<b>10.2</b>	<b>7.6</b>	<b>8.9</b>

Table A-5. Average Number of Miles Driven per Week, All Students

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	7.8	34.2	64.5	94.0	57.4	32.3	45.0
Ohio	7.9	45.7	117.4	157.9	87.7	47.9	69.2
Wisconsin	7.6	50.4	109.5	142.3	83.7	53.4	69.9
SADD	8.1	41.8	87.6	122.7	70.3	40.3	56.1
None	7.2	48.5	117.3	153.2	90.4	54.2	73.8
<b>TOTAL</b>	<b>7.7</b>	<b>44.6</b>	<b>101.8</b>	<b>136.5</b>	<b>79.2</b>	<b>46.3</b>	<b>63.7</b>

Most students acquired drivers licenses as sophomores and juniors. They did so at different rates in the three states, with Wisconsin showing the most sophomore and junior license-holders and Arizona the fewest. Overall, more males were licensed than were females, with the difference smallest and not statistically significant in Wisconsin. Fewer SADD-school students were licensed than comparison-school students (44 percent vs. 50 percent); the difference was not statistically significant.

Table A-6. Percent Students with Drivers License at Time of Survey

State/ Program	Grade				Sex		TOTAL
	9th	10th	11th	12th	Male	Female	
Arizona	1.3	26.8	67.8	83.4	43.0	35.6	39.3
Ohio	1.4	29.7	83.8	93.6	50.1	42.7	46.3
Wisconsin	1.1	40.1	88.4	94.9	52.8	51.4	52.0
SADD	1.2	31.9	80.1	91.0	46.7	42.1	44.2
None	1.4	34.8	84.6	92.9	53.2	47.9	50.5
<b>TOTAL</b>	<b>1.3</b>	<b>33.1</b>	<b>82.3</b>	<b>91.9</b>	<b>49.6</b>	<b>44.6</b>	<b>47.1</b>

Tables A-7 and A-8 further describe the licensing history of the students in this study. On average, students got their licenses by the time they were about 16 1/2 years old. (Because so few ninth graders were licensed, values for freshmen in these two tables are not shown.) The average age-got-license went up slightly from tenth to twelfth graders, as the students who

did not get licenses as sophomores got licenses at older ages as juniors or even seniors. Males and females with licenses got them at about the same ages.

The average number of months that students had held their licenses also increased consistently from grades ten through twelve. For both when they got licenses and how long they had held them, there were no significant differences between SADD and comparison schools.

Table A-7. Average Age at Which Students, with Licenses, Got Their Licenses

State/ Program	Grade			Sex		TOTAL
	10th	11th	12th	Male	Female	
<b>Arizona</b>	16.20	16.47	16.72	16.52	16.52	<b>16.52</b>
<b>Ohio</b>	16.28	16.43	16.61	16.48	16.48	<b>16.48</b>
<b>Wisconsin</b>	16.20	16.35	16.49	16.39	16.36	<b>16.37</b>
<b>SADD</b>	16.24	16.40	16.60	16.46	16.43	<b>16.45</b>
<b>None</b>	16.21	16.40	16.56	16.43	16.42	<b>16.43</b>
<b>TOTAL</b>	<b>16.22</b>	<b>16.40</b>	<b>16.58</b>	<b>16.45</b>	<b>16.43</b>	<b>16.44</b>

Males and females with licenses, as noted, got them at about the same ages, but females had held them on average about one month less. Taken together with the age difference between boys and girls (Table A-1), this suggests the interpretation that boys and girls are licensed at almost exactly the same calendar age but that, since boys are slightly older than girls in the same grade, boys get licensed slightly earlier according to the school calendar.

Table A-8. Average Number of Months Students with Licenses Have Had Them

State/ Program	Grade			Sex		TOTAL
	10th	11th	12th	Male	Female	
Arizona	5.8	11.0	19.5	13.8	13.3	13.6
Ohio	5.6	11.2	20.4	14.4	13.8	14.1
Wisconsin	5.6	12.1	22.0	15.0	14.5	14.7
SADD	5.3	11.3	20.6	14.1	13.7	13.9
None	6.1	11.8	21.4	15.0	14.4	14.7
<b>TOTAL</b>	<b>5.6</b>	<b>11.6</b>	<b>21.0</b>	<b>14.6</b>	<b>14.0</b>	<b>14.3</b>

Taken together, the information in this Appendix on student ages, driving experience and current activities, and licensure shows small and irregular differences between SADD and comparison schools.

## **Appendix B. Factor Analyses of Attitude Measures**

## Factor Analyses of Attitude Measures

In order to examine the nine attitude items for common themes, they were subjected to a factor analysis (SPSS version 4.0, 1992). Intercorrelations between items were very weak. Only five correlations had absolute values above .30; the highest was .39. Because of the large number of cases ( $n = 16,457$  cases with responses to all items were included in the factor analysis), however, nearly all correlations, including ones as small as .016, were statistically significant.

The initial factor analysis yielded three factors with eigenvalues above 1.0 (values were 2.51, 1.10, and 1.01). The three factors were retained and subjected to a Varimax orthogonal rotation. The rotation provided only slight changes from the original factor positions. Final (rotated) factor loadings for the nine items are shown in Table B-1. The descriptions below attempt to characterize the underlying themes of the factors based on the contributing items.

**Factor 1 — Society's Official Views.** This factor may best be described as the official view of teens and alcohol and of drinking and driving, with emphasis on negative consequences. Highest factor loadings were for fear of DWI arrest and the consequences of parents catching the teen drinking. Other high loadings were for non-alcoholic parties being fun, refusing to ride with a driver who had been drinking, one beer being enough for a teen driver to be "under the influence," and (negatively) high school drinking is not okay and driving after a couple of beers is dangerous.

**Factor 2 — Part of Social Fabric.** This factor may be characterized as "drinking is part of my social life." Items loading highly on this factor were that friends would make fun if the teen didn't drink, driving after a couple of beers is not dangerous, it's okay for high school students to drink, and non-alcoholic parties are not as much fun. A sub-theme for this factor may be that it is associated with the high school male view, since these items were the ones showing the largest male-female differences.

**Factor 3 — Ease of Teens Purchasing.** This factor is concerned with only one item, 14f, which asks how easy it is for teens to purchase alcohol in their own communities.

Scores on these factors were subjected to the same linear models statistical analysis as the survey items. For factor 1, the largest significant difference was for males vs. females, with females scoring more highly ( $p < .001$ ). Smaller differences which were also statistically significant ( $p < .001$ ) were for school grade, with freshmen scoring lowest and juniors scoring slightly higher than seniors. The difference between SADD and comparison schools was not statistically significant. Patterns were very similar for factor 2. Females scored much lower than males, and scores dropped consistently from freshmen to seniors (indicating, perhaps, that older high school students were less likely to link alcohol to social facilitation or success). Again, the difference between SADD and comparison schools was not significant.

Factor 3 showed results nearly identical to those for the single item which contributed to it, 14f, ease of buying alcohol in the community.

Table B-1. Factor Structure for Nine Attitude Statements

Item	Varimax Factor Loadings		
	F1. Society Guidelines	F2. Social Value	F3. Ease of Purchase
14a. Driving after drinking a couple of beers isn't really dangerous	-.40	.60	.03
14b. There is nothing wrong with high school students drinking, as long as they don't drive	-.51	.41	.04
14c. I would not accept a ride with a friend who has been drinking	.58	-.12	.10
14d. In this state, one beer is enough to make a teenage driver legally "Under the influence of alcohol"	.46	-.13	.26
14e. Non-alcoholic parties can be just as much fun as parties at which alcohol is served	.60	-.36	.16
14f. It is very easy for teenagers to buy beer in this community	.00	.05	.96
14g. My friends would make fun of me if I didn't drink	.19	.79	.00
14h. My parents would be extremely upset if I was caught drinking	.66	.12	-.07
14i. The fear of getting arrested for driving drunk is enough to stop me from doing it	.67	.04	-.10